REPORT RESUMES

ED 002 790 24
REFINEMENT OF A NONVERBAL MEASURE THAT CAN BE USED WITH NONREADERS, SLOW LEARNERS, AND MENTALLY RETARDED CHILDREN.
BY- KVARACEUS, WILLIAM C.
BOSTON UNIV., MASS.
REPORT NUMBER CRP-015 PUB DATE 60
EDRS PRICE MF-$0.18 HC-$4.40 110P.

DESCRIPTORS- *MENTAL RETARDATION, *RETARDED CHILDREN, *SLOW LEARNERS, *INTELLIGENCE TESTS, *DELINQUENT IDENTIFICATION, JUNIOR HIGH SCHOOLS, BEHAVIOR DEVELOPMENT, BOSTON, MASSACHUSETTS, KD PRONENESS SCALE

VALIDATION AND REFINEMENT WERE MADE OF A NONVERBAL GROUP MEASURE (KD PRONENESS SCALE) OF DELINQUENCY PRONENESS WHICH CAN BE USED WITH ALL CHILDREN INCLUDING NONREADERS, SLOW LEARNERS, AND THE MENTALLY RETARDED. BEFORE-AND-AFTER DATA WERE GATHERED ON A JUNIOR HIGH SCHOOL POPULATION, GRADES SEVEN TO NINE (N 2000) IN ONE CITY PUBLIC SCHOOL SYSTEM AND A SPECIAL CLASS SAMPLE FROM TWO COMMUNITIES (N 200). SUBJECTS WERE SHOWN 62 SETS OF PICTURES, AND ASKED TO INDICATE WHICH PICTURES THEY LIKED MOST AND LEAST. ALSO, BEHAVIORAL ADJUSTMENT DATA WERE GATHERED OVER A 30-MONTH PERIOD BY FIELDWORKERS. THE RELATIONSHIPS BETWEEN THE PREDICTION MEASURE OF PICTURES AND THE ADJUSTMENT CRITERIA WERE INVESTIGATED. THE NONVERBAL SCALE WAS KEYED ON THE BASIS OF AN ITEM ANALYSIS OF THE RESPONSES OF NONDELINQUENTS IN PUBLIC SCHOOLS COMPARED WITH INSTITUTIONALIZED DELINQUENTS IN SEVERAL STATE INSTITUTIONS. IN ADDITION, RELATIONSHIPS BETWEEN THE KD VERBAL SCALE, KD CHECK LIST, AND THE NONVERBAL SCALE WERE INVESTIGATED. THE REVISED NONVERBAL SCALE FAILED TO PASS THE RIGOROUS TESTS OF VALIDATION SET UP FOR EACH GRADE AND FOR THE VARIOUS GROUPS IN THE FORECASTING OF NORM-VIOLATING BEHAVIOR. IT WAS CONCLUDED THAT THE SCALE WAS NOT ACCEPTABLE AS A FUNCTIONALLY USEFUL INSTRUMENT THAT COULD BE INCORPORATED EASILY OR READILY IN A SCHOOL-COMMUNITY DELINQUENCY PREVENTION PROGRAM. (JL)

ED002790

U. S. DEPARTMENT OF HEALTH, EDUCATION AND WELFARE
Office of Education
This document has been reproduced exactly as received from the person or organization originating it. Points of view or opinions stated do not necessarily represent official Office of Education position or policy.

REFINEMENT OF A NON-VERBAL MEASURE THAT CAN BE USED WITH NON-READERS, SLOW LEARNERS, AND MENTALLY RETARDED CHILDREN

Cooperative Research Project No. 015 ~~64~~03

William C. Kvaraceus

Boston University
Boston, Massachusetts

1960

The research reported herein was supported through the Cooperative Research Program of the Office of Education, U. S. Department of Health, Education, and Welfare.

ACKNOWLEDGEMENT

A three-year prediction study involving the extensive collection of behavioral adjustment data reporting minor and major norm violations of large numbers of school children and youth in two large urban centers could not be carried out without the close cooperation of many local youth workers and officials. The execution of this study was made possible through the combined efforts of many local school, police, and court officials in Malden and Fall River, Massachusetts. I am especially indebted to Dr. Chester W. Holmes, Superintendent of Malden Public Schools, and Dr. William C. Lynch, Superintendent of Fall River Public Schools. Both these administrators opened their schools to the investigator and insured continuous support via their staffs in the long and laborious data gathering and feed-back processes. Other Malden school officials who gave of their time and effort included John B. Mathews, Head Master, and Arline J. Walton, Director of Testing, both of the Malden Public School staff.

School-community workers who made up my part-time staff and who were mainly responsible for gathering before-and-after data included the following counselors in Malden Junior and Senior High Schools: Barbara R. Norton, Mabel B. Peterson, Martha T. Leonard, Edna E. Turkington, Chester W. Santilli, and Bertha M. Howard, Director of Special Classes. In Fall River schools John J. Gallagher, Adjustment Counselor, carried out the same functions.

Members of the Boston University staff who assisted me in administering and reporting this project included Dr. James A. Wylie, who acted as field supervisor and liason officer, and John H. Weatherby, who assisted in the recording, coding, and collating of the data. Special mention is due Mr. Weatherby for his assistance in interpreting and preparing the final report.

A word of appreciation is long overdue to the institutional heads and staffs in Connecticut, Rhode Island, and Massachusetts, who, early in our study, cooperated in the development of scoring keys for boys and girls by administering the non-verbal scale to the adjudicated delinquents in their training schools.

Throughout this project we profited from the close and continued cooperation of the Police Departments, the Metropolitan Police force, and local court and probation personnel.

And, last, a word of thanks to my good friends and colleagues, John Alman and Sylvia Fleisch, who advised on and expedited the machine processing of all our data.

Without the help and assistance of all these individuals and many others who remain unnamed, this investigation could never have been carried out.

William C. Kvaraceus
Project Director

TABLE OF CONTENTS

CHAPTER PAGE

I. NATURE AND PURPOSE OF THE VALIDATION STUDY OF DELINQUENCY PREDICTION MEASURE 1

Purpose of the Study 3

Development of the KD Proneness Scale (non-verbal) . 3

Description of the Scale 4

Other Objective Measures 5

Validation Research Methodology 6

The Research Design 7

Procedures 7

Subjects 7

Testing 7

Other "Before" Data 8

The "After" Data 10

II. THE ITEM ANALYSIS 12

Subjects Used for the Item Analysis 12

Administration of the Scale 13

Statistical Analysis 14

III. ANALYSIS AND TREATMENT OF THE DATA 22

Subjects in the Validation Study 22

Descriptive Statistics 23

Intercorrelations Between Variables 25

Analysis of Variance 32

Analysis of Variance by Total Reading Ability . . . 32

Analysis of Variance by Intelligence 39

CHAPTER PAGE

Analysis of Variance by After-Data Grouping 54

Analysis of Variance by Regrouped After-Data 62

Relationship Between the Verbal and Non-verbal Forms of the KD Proneness Scale 67

Reliability of the Scale 70

IV. SUMMARY AND CONCLUSIONS 72

Summary 72

The Item Analysis 73

The Validation Study 73

Results 74

The Descriptive Statistics 74

Intercorrelations Between the Variables 75

Analysis of Variance by Total Reading 77

Analysis of Variance by I.Q. 78

Analysis of Variance by After-Data 80

The KD Proneness Scale (verbal) 81

Limitations of the Study 81

Suggestions for Further Research 82

REFERENCES 85

APPENDIX 86

The KD Proneness Scale (non-verbal) 87

Answer Sheet for the KD Proneness Scale (non-verbal) . 88

Code Card 89

Report Form 90

LIST OF TABLES

TABLE PAGE

1. Distribution by age of the delinquent and non-delinquent boys and girls used in the Item Analysis 13

2. A tabulation of the significant chi-squares indicating the difference in choice by item for 289 delinquent boys and 289 non-delinquent boys. The direction of choice for each picture is indicated. 16

3. A tabulation of the significant chi-squares indicating the difference in choice by item for 277 delinquent girls and 277 non-delinquent girls. The direction of choice for each picture is indicated. 19

4. Distribution by sex and grade of the 1594 subjects used in the analysis of the data in the validation study . . . 23

5. Means and standard deviations of I.Q., KD Proneness Scale (non-verbal), Minor and Major Disobediences, Detention, and Cheating by sex and grade 24

6. Intercorrelations between the behavior rating, I.Q., vocabulary, paragraph meaning, total reading, KD Proneness Scale (non-verbal), and the after-data for 7th grade boys and girls 26

7. Intercorrelations between the behavior rating, I.Q., vocabulary, paragraph meaning, total reading, KD Proneness Scale (non-verbal), and the after-data for 8th grade boys and girls 27

8. Intercorrelations between the behavior rating, I.Q., vocabulary, paragraph meaning, total reading, KD Proneness Scale (non-verbal), and the after-data for 9th grade boys and girls 28

9. Intercorrelations between the Behavior Rating, Stanford-Binet I.Q., the KD Proneness Scale (non-verbal), and the After-Data for the Malden Special Class boys and girls . 30

10. Intercorrelations between the Behavior Rating, Stanford-Binet I.Q., the KD Proneness Scale (non-verbal), and the After-Data for the Fall River Special Class boys and girls 31

11. Analysis of variance by Total Reading for graded boys . . 33

TABLE PAGE

12. Analysis of variance by Total Reading for graded girls. . 37

13. Summary of the F-ratios and rank-order continuity in the analysis of variance by Total Reading 38

14. Analysis of variance by I.Q. for grade 7 boys 40

15. Analysis of variance by I.Q. for grade 8 boys 41

16. Analysis of variance by I.Q. for grade 9 boys 42

17. Analysis of variance by I.Q. for grade 7 girls 45

18. Analysis of variance by I.Q. for grade 8 girls 46

19. Analysis of variance by I.Q. for grade 9 girls 47

20. Analysis of variance by I.Q. for the Fall River Special Class boys 49

21. Analysis of variance by I.Q. for the Malden Special Class boys 50

22. Analysis of variance by I.Q. for the Malden Special Class girls 52

23. Summary of F-ratios and rank-order continuity in the analysis of variance by I.Q. 53

24. Means and standard deviations by after-data grouping for the total graded male population 55

25. Means and standard deviations by after-data grouping for the total graded female population 58

26. Means and standard deviations by after-data grouping for the Fall River Special Class boys 59

27. Means and standard deviations by after-data grouping for the Malden Special Class boys and girls 60

28. Analysis of variance by after-data grouping for the total graded male population 63

29. Analysis of variance by after-data grouping for the total graded female population 64

TABLE PAGE

30. Analysis of variance by after-data grouping for the Malden Special Class boys and girls 66

31. Intercorrelations between the Behavior Rating, Binet I.Q., KD Proneness Scale (non-verbal), after-data, and KD Check List for the Malden Special Class boys and girls 69

ETS Conference
New York City, Nov. 1, 1958
William C. Kvaraceus

CHAPTER I

NATURE AND PURPOSE OF THE VALIDATION STUDY OF A DELINQUENCY PREDICTION MEASURE

Juvenile delinquency is a complex and contentious topic constantly fermenting on the American scene. Faced with the delinquency problem at the local level, a community can hope to achieve some measure of prevention and control only to the extent to which its efforts are characterized by the following:

(1) A positive community attitude. The delinquent must be viewed as a child needing understanding and help rather than punishment and placement outside the community. It is generally true that the delinquent is a hostile child, but one who also faces an equally hostile community. Community workers cannot help the delinquent or his family by doing business on a two-way street of hate and hostility.

(2) A knowledge of the delinquency phenomenon. The community must plan on the basis of plausible and research-oriented theory of delinquency as a form of adjustment in our culture and subcultures; it must have some knowledge of the geography, psychology, and sociology of the delinquency act on the local scene; and it must come into the more intimate knowledge of the specific delinquent act through case-study approaches. Lacking knowledge at these three levels, the community may booby-trap itself into "impractical-practical" approaches, (curfew, wood-shed, anti-parent legislation) which are irrelevant, if not harmful, to delinquency control and prevention. Common sense opinions cannot be trusted in this field. We must

look for, and stick to, the data available from within the behavioral sciences - even in the face of the irrational (unscientific) lay critic, the frightening and shrill cry of the feature writer, or the crusading editorial commentator.

(3) Early identification of pre-delinquent and delinquent. Delinquent behavior is not a 24-hour malady; it develops over a long period of time. In the continuity of behavior, the future delinquent presents some hints and rumblings of his coming explosions.

(4) Early referral for study and diagnosis. Once the delinquent or pre-delinquent has been identified there must be available special service personnel (psychologists, social workers, psychiatrists, counselors) to help get at the meaning and predisposing factors of the maladapted behavior. True these professional services cost money, but this is no dime-store problem.

(5) Treatment through coordination of community resources. Using all child and family-serving agencies, the resources of the community must be brought to bear on the individual in a systematic, scientific, and individualized effort of rehabilitation based on case and community study.

This piece of research focuses on the third aspect, on a methodology and a technique aimed to help the community worker in the process of early identification of the pre-delinquent. Apart from the primary and direct attack on the delinquency problem via the general improvement in patterns of family living, in more effective school programs, in neighborhood value systems, and in leisure time offerings, etc., delinquency prevention programs

will depend heavily on the ability to identify at an early date (perhaps as early as the first grade level) the youngster who is prone, vulnerable, exposed, or susceptible to the delinquent pattern of adjustment.

Purpose of the Study

The major purpose of this paper is to report on the results of the validation study of the revised edition of the KD Proneness Scale (non-verbal). The specific objectives of the study included the following:

(1) To reconstruct and/or to add additional picture items to the K D Proneness Scale: Non-Verbal Form.

(2) To analyze the effectiveness of all items to distinguish between delinquents and non-delinquents within selected criterion groups including slow-learners, non-readers, and mentally retarded groups.

(3) To investigate the validity of the refined scale with the following categories: non-readers, slow-learners, and mentally retarded pupils.

(4) To check the reliability of the refined measure.

(5) To investigate the relationship of the KD Non-Verbal Form, KD Checklist, KD Scale, and an intelligence test score.

Development of the KD Proneness Scale (non-verbal)

The KD Proneness Scale (non-verbal) is an instrument designed to predict delinquency proneness. Delinquency, as a phenomenon, does not exist as a unique or separate entity of behavior except in legal usage. Rather, it represents one end of a behavior continuum with exemplary behavior at the other end. Research has isolated certain factors both internal and in the environment that distinguish the delinquent from the non-delinquent. Kvaraceus (6) utilized these predictors to develop the KD Proneness Scale (verbal) is an aid in identifying the potentially delinquent youngster. This verbal instrument has been found sensitive

enough to spot those pupils who may be vulnerable to the forces which predispose towards delinquency.

The KD Proneness Scale (verbal) and many other measures that have been used to identify the potential delinquent either require a relatively good reading skill on the part of the subject or they are too complicated and time-consuming for the average classroom teacher to administer. It is known that delinquents tend to be educationally retarded and have poor verbal skills. To overcome these obstacles, a non-verbal form of the KD Proneness Scale was developed. The construction and validation of the KD Proneness Scale (non-verbal) was the doctoral dissertation of John R. Eichorn (2) done under the direction of Kvaraceus. Details of the construction and validation are found in this report.

Description of the Scale

The KD Proneness Scale (non-verbal) consists of 62 circles each divided into four quadrants. Each quadrant contains a picture. The subject is asked to pick one of the four pictures which he likes the MOST and one of the four pictures which he likes the LEAST. Responses are made on a separate answer sheet. Thus, a subject responds MOST and LEAST to each of the 62 items. The first two items are for demonstration and trial purposes.

The score for the test is obtained by the use of two keys: one key indicates direction toward delinquency and is called the "plus" (+) key, the other indicates direction away from delinquency and is called the "minus" (-) key. The total score is the algebraic sum of the plus and minus count added to 50. The algebraic sum is added to 50 to bring all scores within a positive (+) numerical range.

Each circle of four pictures was designed to contain one picture which the literature suggests more delinquents would choose and one which more non-delinquents would select. The other two pictures were considered to be neutral. The rationale for each picture is to be found in Eichorn's (2) dissertation.

Eichorn found fourteen items that did not discriminate either at the 1% or 5% level of confidence between the delinquent and non-delinquent samples. Kvaraceus revised these items with pictures felt to be more discriminating. The new pictures were included in what is now called the revised edition of the KD Proneness Scale (non-verbal). It is this instrument with which this study is concerned.

Other Objective Measures

There have been many attempts to differentiate the delinquent from the non-delinquent by objective means. Some of the instruments used for this purpose were specifically developed for the task; others have been adapted to it. Kvaraceus (8) indicates those instruments and techniques that the literature indicates might warrant further study and research. Those instruments that purport to be sensitive enough to detect the vulnerable child include the following:

1. Personal Index of Problem Behavior (10).
2. Minnesota Multiphasic Personality Inventory (4) (5).
3. Porteus Maze Test (13).
4. Washburne Social-Adjustment Inventory (16).
5. Glueck Prediction Tables (3).
6. Behavior Cards: A Test-Interview for Delinquent Children (14).
7. KD Proneness Scale and Check List (6).

Few of these instruments show any predictive validity data. Only the Minnesota Multiphasic Personality Inventory and the Glueck Prediction Tables appear to have been adequately validated for delinquency proneness.

Validation Research Methodology

In the validation of an instrument that is to be used to predict human behavior, a before-and-after design is a necessity. The instrument should be administered to a group of subjects and prediction made relative to their future behavior on the basis of the scores attained. Sufficient time must elapse for the behavior to be carefully and thoroughly observed. Then the relationships between the predicted and actual behavior should be made and expressed in terms of predictive efficiency.

We have already noted that behavior exists on a continuum; there is no clean-cut dichotomy between delinquent and non-delinquent behavior. What is needed, then, is an instrument similarly graduated on the delinquent - non-delinquent behavior scale. Kvaraceus (9) has indicated that "until such a measure, based on some system of habituation and seriousness of offense, is worked out the unreliability of the criterion measure itself will seriously reduce the validity coefficient assuming that a high degree of relationship exists between the forecasting technique and adjustment."

Prediction of human behavior implies a basic assumption: that there is continuity of behavior. Many factors can disrupt the continuity. There are many forces which can push the "good" youth in the direction of socially unacceptable conduct, and there are forces which can deter the wayward youth from continuing his present direction. One poignant experience can be traumatic and suddenly alter the established pattern of life of a youngster. These are but some of the problems to be considered when working on the validation of an instrument designed to "predict" future outcomes of behavior.

The Research Design

The validation of the KD Proneness Scale (non-verbal) was designed as a before-and-after study. Subjects were tested with the Scale (and other measures) and a prediction concerning their future behavior was made. Their actions were watched and recorded for a period of three years. Then the relationship of the predicted behavioral outcome was compared to the actually recorded behavior, and conclusions are drawn here regarding the validity of the prediction.

Procedures

Subjects

The subjects for this study were all of the students in the three Junior High Schools in the city of Malden, Massachusetts. In addition, the Special Class students in the Malden and Fall River school systems were included. Both Malden and Fall River can be described as urban industrial centers.

Testing

The revised edition of the KD Proneness Scale (non-verbal) was administered to each of the subjects under standard testing conditions. The directions used in administering the test were those printed on the cover of the test booklet, a copy of which is included in the Appendix.

The directions were read by the test administrator while the pupils read along silently. The subjects marked their responses on a separate answer sheet with an electrographic pencil to permit machine scoring. Subjects in the special classes marked on the test booklets.

Other "Before" Data

At the start of the study each subject was given a Behavior Rating by his teacher and/or guidance counselor. These ratings were made on a 4-point scale as follows:

1. Exemplary citizen: Highly regarded by all teachers; a force for good in the school; well integrated and socially adjusted; exerts his influence to better living and working conditions in the school, neighborhood and community; frequently assumes responsibility.
2. Average citizen: The youngster who does not call attention to self for any wrong doing; nor does he call attention to himself as an outstanding leader for good; if infractions are committed, these are accidental, minor and infrequent; gets along with peers and his teachers.
3. Marginal: The youngster is frequently suspected of wrong doing and occasionally involved in small offenses; has trouble with a few teachers and with some fellow students; considered to be a "discipline problem" by some teachers but not a serious or habitual offender.
4. Low morale: In serious difficulty around the school or on playground; known to have been involved in any of the following: truanting, stealing, sex misconduct, hurting others, vandalism, cheating, breaking school rules, or has had contact

with police or with courts. People in school or in community frequently complain about him.

Concomitant with the start of this validation study the investigator initiated an in-service training program for teachers and administrative personnel of the Malden Junior High Schools. These persons were thoroughly acquainted with the nature and purpose of the study and their role in it.

Intelligence score from a group I.Q. test previously administered and recorded on the Cumulative Record at the local schools were secured for each subject. For the original 7th grade students scores from the California Short-Form Test of Mental Maturity, Elementary '50 S-Form which had been administered to them in the 6th grade were used. The original 8th grade students in the study had on record I.Q. scores from an Otis Beta Form EM taken the previous year when they were in the 7th grade. The original 9th grade students in the study had scores recorded from the California Short-Form Test of Mental Maturity Elementary''50 S-Form which they had taken in the 7th grade.

The verbal skills were determined for each subject. The original 7th and 8th grade students in the study were tested in their 8th grade with the Stanford Achievement Test (Partial) Advanced Form JM. Scores for verbal skills were on record for the original 9th grade students from the Iowa Every Pupil Test of Basic Skills, Advanced Reading, which they had taken when they were in the 7th grade. Scores on Vocabulary, Paragraph Meaning, and Total Reading Achievement were recorded for each subject by quartile standing.

All of the Special Class students either had taken a Stanford-Binet

I.Q. test or one was administered to them at the outset of the study. Only Binet I.Q.'s were used for the Special Class students.

In some classrooms, the teachers also administered the KD Proneness Scale (verbal form) and the KD Check List as part of their in-service training. These scores were added to the other "Before" data.

The "Before" data, then, included the following: Behavioral Rating, Group I.Q. for graded pupils and Binet I.Q. for Special Class students, verbal achievement scores, KD Proneness Scale (non-verbal), and in some instances the KD Proneness Scale (verbal) and KD Check List.

These data were entered on a code card for each student. The code cards for the boys were green, and those for the girls were white. Personal information concerning each student was also entered on the code card. This information included the student's full name, address at the start of the study, date of birth, sex, school and grade of the pupil at the time the study was initiated, and the date the KD Proneness Scale (non-verbal) was taken. Later each code card was given a number. These numbers were assigned consecutively from 0001 to 2414 according to the alphabetical listing of all of the students in the study. A sample code card is to be found in the Appendix.

The "After" Data

The behavior of the subjects was carefully followed and recorded for the three-year period of the study. School and community personnel made the observations which were forwarded to the study headquarters at Boston University for posting on the code card. A statistical clerk had the responsibility for the recording of all data on the code cards. Undergraduate assistants in the Measurements Laboratory did the actual clerical posting of data. Dr. James A. Wylie was the field agent for the study and served as liason between the study and the schools, social agencies, police, courts, etc.

Evidence of misbehavior was made on a special report form by teachers, principals, guidance counselors, police, court probation officers, social agency personnel, etc. A copy of the report form is to be found in the Appendix. The "After" data included the following specific offenses: Truant, Disobedience-Major, Disobedience-Minor, Detention, Cheating, Stealing, Damage to Property, Hurt Others, Sex Problem, Social Agency Contact, Police Contact, and Court Contact. Occasionally an act was reported that did not fall in one of the above categories. It was noted elsewhere on the code card under the heading "other" offense.

Each offense was recorded by a tally mark in the appropriate space on the code card, and at the conclusion of the study these tallies were totalled and recorded in the respective boxes on the card. Data from the green and white code cards was transferred directly to I.B.M. punch cards for statistical analysis of the data by the Statistical Research Department of the University. The work was done on the I.B.M. 650 computer.

CHAPTER II

THE ITEM ANALYSIS

Before the KD Proneness Scales (non-verbal) that had been administered to the subjects in the study could be scored, a set of scoring keys had to be developed. The keys derived by Eichorn (2) were not applicable since fourteen of the original items had been revised. Further, Eichorn had developed scoring keys only for boys.

Subjects Used for the Item Analysis

The method used to develop the scoring keys was to ascertain the difference in responses to each item made by a group of known ajudicated delinquents as compared to the responses made to each item by a sample of non-delinquent students. An unselected sample of 289 boys and 277 girls was drawn from a total of 675 boys and 716 girls tested in the graded classes in the Fall River Junior High Schools. The delinquent boys were the 235 residents of the Lyman School in Massachusetts and 54 boys in the Rhode Island Training School. The delinquent girls were drawn from the following institutions: the Long Lane School, Connecticut, 149; the Lancaster School, Massachusetts, 100; the Rhode Island School for Girls, 32. The total of 281 delinquent girls represents all of the institutionalized girls in the three states at the time of testing.

The non-delinquent boys and girls were randomly equated by age from the group tested in the Fall River Junior High Schools. The distribution of the delinquent and non-delinquent boys and girls used for the item analysis is shown in Table 1.

TABLE 1.--Distribution by age of the delinquent and non-delinquent boys and girls used in the Item Analysis

Boys

Age	Non-Delinquent	Delinquent		
	Fall River	Lyman School	Rhode Island Training School	Total
11	5	5	. . .	5
12	31	26	5	31
13	54	40	14	54
14	88	65	23	88
15	88	76	12	88
16	23	23	. . .	23
Total	289	235	54	289

Girls

Age	Non-Delinquent	Delinquent			
	Fall River	Long Lane Conn.	Lancaster Mass.	Rhode Island Training School	Total
11	2	1	1	. . .	2
12	10	5	4	1	10
13	18	10	7	1	18
14	50	26	19	5	50
15	77	41	28	8	77
16	77	44	26	7	77
17	37	17	13	7	37
18	6	2	1	3	6
Total	277	146	99	32	277

Administration of the Scale

The KD Proneness Scale (non-verbal) was administered to the subjects in accordance with the directions printed on the test booklet.

The subjects, both delinquent and non-delinquent, marked their responses on a separate answer sheet. Marks were made with an electrographic pencil to permit machine scoring.

In the case of some delinquent boys and girls as well as the mentally retarded youngsters in the validation sample adaptations in marking on the booklet rather than on the answer sheet became imperative in view of the complexity of responding on an IBM answer sheet. It was also noted that a few of the items depicted by the pictures apparently were not in the delinquents' universe of knowledge or were ambiguously drawn. Item 21, for example, shows four vegetables: a squash, an ear of corn, a carrot, and two potatoes. It appeared obvious from questions that some of the institutionalized delinquent boys did not recognize the picture of the squash. There were similar doubts about other pictures.

Statistical Analysis

The answer sheets were scored and the frequency of response to each picture made by the unselected non-delinquent graded sample and the institutionalized delinquents was tabulated and recorded.

The data were subjected to a chi-square (X^2) test of significance. The chi-square test assumes the two criterion groups were drawn from the same population and, hence, the frequency of response to each item by the two groups would be similar. The experimental hypothesis is that the delinquent and non-delinquent groups are different and respond differently to the items on the instrument. The null hypothesis is that there is no significant difference between the responses of the two criterion groups. The smaller the value of chi-square the closer the agreement between the observed and the expected results. The larger the chi-square value the greater the probability of a real divergence between the observed and expected results. To be significant at the 1% level of confidence the X^2 value must be equal to or greater than 11.3; it must be 7.82 to be significant at the 5% level of confidence in this analysis. No item was selected for keying where the chi-square value did not reach the 5% level of confidence.

Since the subjects had been required to respond in two ways, MOST and LEAST, to each item, the total chi-square was determined for both of these directions. When the total chi-square value was found to be significant at least at the 5% level, the partial chi-square values of each of the four pictures making up the item were inspected to ascertain which picture contributed sufficiently to the total chi-square value to be considered useful for keying purposes. Reference then had to be made to the original frequency of responses to see whether more delinquents or more non-delinquents had checked an item. If more delinquents than non-delinquents had chosen the picture (as either MOST or LEAST) it was keyed plus (+) indicating direction toward delinquency. If more non-delinquents selected the picture than did delinquents, then the picture was keyed minus (-), indicating direction away from delinquency and toward acceptable behavior. Each picture, then, could possibly be keyed MOST plus or minus and LEAST plus or minus, respectively. If course, if a picture is keyed MOST plus, the same picture could also be keyed

LEAST minus, but not LEAST plus.

The success or failure of the validation study could depend on the accurateness of developing the keys. Since there was considerable subjective thought involved in the final selection of pictures and direction for keying, the writer acknowledges this as his own responsibility, as the ultimate decision was left to his discretion.

Table 2 lists the significant chi-square values for the MOST and LEAST for each item and the plus (+) or minus (-) direction for which the separate pictures, A, B, C, D or E, F, G, H as applicable, was keyed for the boys key.

TABLE 2.--A tabulation of the significant chi-squares indicating the difference in choice by item for 289 delinquent boys and 289 non-delinquent boys. The direction of choice for each picture is indicated.

Item	M or L	Total X^2	Answer Choice				Item	M or L	Total X^2	Answer Choice			
			A or E	B or F	C or G	D or H				A or E	B or F	C or G	D or H
1.	M						8.	M					
	L							L	18.54			-	+
2.	M	16.89	-	+			9.	M	29.64			-	+
	L	17.83	+		-			L	25.69	-		+	
3.	M	31.14	+	-			10.	M	45.96		+	-	-
	L	8.06	-					L	41.68	-	-		+
4.	M	17.44	+		-		11.	M	8.46	-	+		
	L	16.72	-		+			L	16.09	+			-
5.	M						12.	M	45.48	-		+	
	L							L	14.11	+	-		
6.	M	12.04		-		+	13.	M	21.03	+	+		-
	L	15.05	+			-		L					
7.	M	9.58	+	-			14.	M	25.45		-		+
	L	19.40	-	+		+		L	12.02			+	-

TABLE 2--Continued

Item	M or L	Total X^2	Answer Choice				Item	M or L	Total X^2	Answer Choice			
			A or E	B or F	C or G	D or H				A or E	B or F	C or G	D or H
15.	M	29.12			−	+	29.	M					
	L	18.98			+			L					
16.	M	12.53			−		30.	M	31.26		−		+
	L	24.29	−		+			L	200.93	+			−
17.	M						31.	M	20.05			−	
	L							L	14.27	−			
18.	M	10.43	+	−			32.	M					
	L	14.80	−	+	−	+		L	8.78		−	+	
19.	M	8.40		+			33.	M					
	L	7.94	−		+			L	15.17	−		+	
20.	M	8.76			−		34.	M					
	L							L					
21.	M						35.	M	36.52		−	+	
	L	11.88		+				L	27.54		+	−	
22.	M	9.31	+		−	−	36.	M	10.62	−			+
	L							L					
23.	M	26.72		+	−	−	37.	M	26.31	+		+	−
	L	16.08	−		+			L	10.78		+	−	+
24.	M	16.76	+		−		38.	M	20.58			−	+
	L							L	26.59			+	−
25.	M	31.26	+	+	−		39.	M	14.10	−			
	L	34.26	−		+	−		L					
26.	M	75.33	−	+			40.	M					
	L	75.71	+	−				L					
27.	M	20.58	+	−		+	41.	M	38.44		−		+
	L	13.56		+				L	26.13		+		−
28.	M						42.	M	25.82	+			
	L	23.84		+	−			L	10.66	−			

TABLE 2--Continued

Item	M or L	Total X^2	Answer Choice				Item	M or L	Total X^2	Answer Choice			
			A or E	B or F	C or G	D or H				A or E	B or F	C or G	D or H
43.	M	39.73			+	-	53.	M	21.70		-		
	L	32.92	+		-			L	9.12				-
44.	M						54.	M	22.85	+			-
	L	12.06			+	-		L	22.29	-			+
45.	M	28.89			-	+	55.	M	11.70			+	-
	L	18.09			+			L					
46.	M						56.	M	27.18	-		+	
	L	8.68			+			L	10.74	+			
47.	M	20.26				-	57.	M	9.47			-	
	L	16.25	-			+		L					
48.	M	13.15			+	-	58.	M	16.12				+
	L	24.59			-	+		L					
49.	M	9.12		+	+		59.	M	23.26	+			-
	L							L	28.54	-	+		
50.	M	18.08	+			-	60.	M					
	L	40.01	-			+		L					
51.	M	10.94			+		61.	M					
	L	14.61	+		-			L	11.64				+
52.	M	11.87	+		-		62.	M	45.16	+		-	
	L							L	18.32			+	

It can be seen that there are six items which did not differentiate the delinquent boys from the non-delinquent boys. These are items 5, 17, 29, 34, 40, and 60. Only one of these, item 29, also did not differentiate in the original study done by Eichorn (2).

Table 3 lists the chi-square values for the girls and indicates the keying for the girls key.

TABLE 3.—A tabulation of the significant chi-squares indicating the difference in choice by item for 277 delinquent girls and 277 non-delinquent girls. The direction of choice for each picture is indicated.

Item	M or L	Total X^2	Answer Choice				Item	M or L	Total X^2	Answer Choice			
			A or E	B or F	C or G	D or H				A or E	B or F	C or G	D or H
1.	M						14.	M	108.68	-	+	+	
	L							L	67.77	+	-	-	
2.	M	10.91	+				15.	M	113.76	+		-	
	L	15.64	-		+			L	20.37	-		+	
3.	M	32.89	+		-		16.	M	27.47	+	-		
	L	9.80			+	-		L	31.79	-		+	
4.	M	78.87		+	-		17.	M	26.41		+	-	
	L	49.19		-	+			L	15.38		-	+	
5.	M	9.83	-	+			18.	M	55.76	+		-	-
	L							L	34.88			-	+
6.	M	77.23			-	+	19.	M	57.79		+		-
	L	80.51			+	-		L	22.48				+
7.	M	60.15		-	+	+	20.	M	18.53	-			+
	L	21.21	+		-			L	25.20		+		-
8.	M	72.14		+	-	+	21.	M	8.11				+
	L	53.19	+		+	-		L	15.37		+		-
9.	M	11.97				-	22.	M	41.98	+		-	
	L	14.39		-		+		L	19.63	-		+	
10.	M	20.14			-	-	23.	M	46.21			-	
	L	72.62	-			+		L	33.88	-		+	-
11.	M	78.85	+		-		24.	M	16.53	+	-		
	L	50.89	-		+			L					
12.	M	16.02	+				25.	M	12.62			-	+
	L	15.54	-			+		L	59.26			+	-
13.	M	72.76	+	-	+		26.	M	235.47		+	-	-
	L	72.85		+	-			L	109.87		-	+	+

TABLE 3--Continued

Item	M or L	Total X^2	Answer Choice				Item	M or L	Total X^2	Answer Choice			
			A or E	B or F	C or G	D or H				A or E	B or F	C or G	D or H
27.	M						41.	M	84.02		-		+
	L	17.81			+	-		L	60.28			+	-
28.	M	138.10	-		+	-	42.	M	30.49	+			-
	L	118.93	+		-	+		L	13.02	-			+
29.	M	67.41		+	-	+	43.	M	212.66		-	+	-
	L	63.84	+		+	-		L	109.07	+		-	+
30.	M	17.42		-			44.	M	12.87				-
	L							L	23.05		-		+
31.	M	25.15	+	+		-	45.	M	72.30	+		-	
	L	25.48			+	+		L	24.50	-		+	
32.	M	21.02	+	-			46.	M	27.63		+		
	L	15.60	-	+				L	44.27	+	-	+	
33.	M	15.36		-	+		47.	M	32.24			-	+
	L							L	33.37	+			-
34.	M	41.13	-		+		48.	M	37.10			+	-
	L	20.87			-	+		L	70.72			-	+
35.	M	81.34		-	+	-	49.	M	32.28	-	+		
	L	85.69		+	-	+		L	10.64		-	+	
36.	M	47.97			-	+	50.	M	38.56		-		+
	L	62.46		+		-		L	39.96		+		-
37.	M	35.76			+	-	51.	M					
	L	22.11			-			L	9.08		+	-	+
38.	M	38.50		+	-		52.	M	7.84			+	
	L	15.50		-	+			L					
39.	M	165.78		-			53.	M	113.73		+		-
	L	164.66		+				L	51.95	-		+	+
40.	M	56.42	-			+	54.	M					
	L	59.28	+		+	-		L					

TABLE 3--Continued

Item	M or L	Total X^2	Answer Choice				Item	M or L	Total X^2	Answer Choice			
			A or E	B or F	C or G	D or H				A or E	B or F	C or G	D or H
55.	M	26.15			+	+	59.	M	74.79	+	+	-	
	L	18.38	+					L	37.78		-	+	
56.	M	45.31				+	60.	M					
	L	21.86		+		-		L	7.84	+			
57.	M	17.60		+			61.	M	49.94	-		+	
	L	28.95	+	-		+		L	26.07	+			
58.	M	39.64		-		+	62.	M	85.26			-	+
	L	54.48		+		-		L	42.56			+	-

Despite the fact that the KD Proneness Scale (non-verbal) is admittedly oriented to the preferences of boys, the item analyses indicate that there is only one item, #54, that fails at least by one picture, to differentiate delinquent from non-delinquent girls.

Plus (+) and minus (-) scoring keys were developed for both boys and girls in agreement with Table 2 and Table 3. The KD Proneness Scales (non-verbal) of the subjects in the before-and-after validation study were scored with these keys.

CHAPTER III

ANALYSIS AND TREATMENT OF THE DATA

The data consists, generally, of three kinds: 1) a description of the population as measured by such variables as grade, sex, intelligence, reading ability, score on the KD Proneness Scale, all of which are called the "before" data; 2) a description of the behavioral record of the subjects over the three-year span of the study, called the "after" data; and 3) the relationship between the various variables in the before- and after-data.

Subjects in the Validation Study

Of the 2414 students originally tested, complete data was available on 1594 subjects at the conclusion of the study. School leaving, family mobility and absenteeism accounted for most of the ragged data. It is felt that the 1594 represents a very adequate sample of the original population. The figure 1594 includes 1379 students in the graded classes of the Malden Junior High Schools, 123 students from the Malden Special Class, and 92 from the Special Class in Fall River.

Table 4 shows the distribution of students by sex and grade. There were, for example, 245 boys in the 7th grade and 237 girls, making a total of 482 seventh grade students. There were 212 boys and 216 girls for a total of 428 students in the 8th grade. There were 217 boys and 252 girls, or a total of 469 students in the 9th grade. There were 77 boys and 46 girls from the Fall River Special Class and 59 boys and 33 girls from the Special Class in Malden.

TABLE 4.--Distribution by sex and grade of the 1594 subjects used in the analysis of the data in the validation study

Grade	Boys	Girls	Total
Grade 7	245	237	482
Grade 8	212	216	428
Grade 9	217	252	469
Fall River Special Class . .	77	46	123
Malden Special Class	59	33	92
Total	810	784	1594

Descriptive Statistics

Table 5 shows the means and standard deviations of all the boys and girls on the variables of Intelligence, score on the KD Proneness Scale (non-verbal), the number of Minor and Major Disobediences and the frequency of Detentions. An examination of the distribution of I.Q.'s by grade and sex indicates that the scores are comparable and that they fall within one Standard Error of Measurement (SE_m) of the instrument used. The I.Q. of the special classes falls around 70, as might be expected for this group. The Fall River Special Class girls appear to be slightly less bright than the other Special Class groups. Boys normally score higher on the KD Proneness Scale than girls, and this fact is borne out as indicated in the table. Both the Special Class boys and girls score considerably higher on this variable than do the graded students. And there is a slightly higher score for the Fall River girls in the Special Class than the Malden Special Class girls. The mean frequency of Minor and Major Disobediences, of Detentions, and of Cheating is very small. In most instances it is less than one for the several grades and the different sexes within grades. And, in general, TABLE 5.--Means and standard deviations of I.Q., KD Proneness Scale (non-verbal), Minor and Major Disobediences, Detention, and Cheating by sex and grade

Variable	Grade 7		Grade 8		Grade 9		Fall River S.C.		Malden S.C.	
	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
Boys										
I.Q.	100.49	12.18	99.79	12.86	103.57	11.40	70.42	12.61	71.97	11.28
KD Proneness Scale . .	32.91	10.23	30.22	10.24	32.12	10.83	44.91	10.54	43.02	8.79
Minor Disobedience . .	.69	1.61	.52	1.36	.35	1.04	.08	.26	3.29	5.72
Major Disobedience . .	.78	2.92	1.02	3.24	.31	.82	.16	.66	1.19	2.76
Detention . .	.22	.68	.17	.57	.16	.48	. . .	. . .	1.41	3.25
Cheating . .	.04	.22	.02	.14	.01	.10	.04	.24	.08	.26
Girls										
I.Q.	100.86	11.78	103.08	11.17	101.01	12.01	65.65	13.10	71.82	8.44
KD Proneness Scale . .	16.25	15.36	21.28	17.90	22.87	19.61	30.61	16.16	24.94	14.21
Minor Disobedience . .	.13	.51	.11	.46	.18	.57	. . .	. . .	3.82	5.38
Major Disobedience . .	.14	.99	.15	.71	.12	.46	. . .	. . .	1.09	2.19
Detention . .	.16	.59	.07	.28	.13	.59	. . .	. . .	.18	.45
Cheating . .	.02	.20	.01	.14	.05	.24	. . .	. . .	1.15	3.19

there is a very slight, although not consistent, tendency for the means of the graded boys to decrease from Grade 7 to Grade 9. One exception to this is the Major Disobediences of the 8th Grade boys. A noticeable difference is observed with the Special Classes on these variables. The Fall River Special Class boys have lower means on Major and Minor Disobediences than the Special Class boys in Malden. No value is recorded for Detentions for the Fall River Boys. The Fall River girls have no values for Disobedience, Detention, or Cheating. The Malden Special Class students, both boys and girls, have greater means on these variables than do their graded counterparts. One might suspect that the behavior of the Special Class student in Malden is looked upon somewhat differently than is that of the Special Class student in Fall River. Perhaps the Malden Special Class teacher has a lower frustration tolerance than the Special Class teacher in Fall River.

Intercorrelations Between Variables

Tables 6, 7, and 8 show the intercorrelations between the teachers' ratings of the students behavior at the beginning of the study, intelligence, verbal skills, and the KD Proneness Scale (non-verbal) by grade and sex. As would be expected, there is a relatively high correlation found between intelligence and the reading skills: Vocabulary, Paragraph Meaning, and Total Reading. When intelligence is correlated with the verbal skills for all the graded boys and girls, the value falls about .68. Except for the intercorrelations among the verbal skills themselves and the verbal skills with intelligence, the rest of the matrix shows little relationship among the several variables. For the

TABLE 6.--Intercorrelations between the behavior rating, I.Q., vocabulary, paragraph meaning, total reading, KD Proneness Scale (non-verbal), and the after-data for 7th grade boys and girls

Variable	I.Q.	Vocabulary	Paragraph Meaning	Total Reading	KD Proneness Scale	After-Data
			Boys			
Behavior Rating	.2896**	.1928**	.2898**	.2813**	.2252**	.3417**
I.Q.	. . .	.6242**	.6714**	.7271**	.2670**	.2509*
Vocabulary	. . .	. . .	.6173**	.8210**	.1628*	.1123
Paragraph Meaning	. . .	. . .	. . .	.8599**	.2333**	.2233**
Total Reading	. . .	. . .	. . .	. . .	.2183**	.2331**
KD Proneness Scale . .	. . .	. . .	. . .	. . .	. . .	.1142
			Girls			
Behavior Rating	.2051**	.1188	.2287**	.1898**	.1511*	.1483*
I.Q.	. . .	.6670**	.6905**	.7434**	.1692**	.2177**
Vocabulary	. . .	. . .	.6540**	.8510**	.1563*	.2556**
Paragraph Meaning	. . .	. . .	. . .	.8825**	.2188**	.1800**
Total Reading	. . .	. . .	. . .	. . .	.2003**	.2520**
KD Proneness Scale . .	. . .	. . .	. . .	. . .	. . .	.0985

*Significant at the 5% level of confidence.
**Significant at the 1% level of confidence.

TABLE 7.--Intercorrelations between the behavior rating, I.Q., vocabulary, paragraph meaning, total reading, KD Proneness Scale (non-verbal), and the after-data for 8th grade boys and girls

Variable	I.Q.	Vocabulary	Paragraph Meaning	Total Reading	KD Proneness Scale	After-Data
Boys						
Behavior Rating	.2505**	.2747**	.2456**	.2777**	.3396**	.4994**
I.Q.	. . .	.7366**	.7209**	.7558**	.1949**	.1929**
Vocabulary	. . .	. . .	.7290**	.8914**	.2777**	.2338**
Paragraph Meaning . . .	. . .	. . .	. . .	.8958**	.2045**	.1918**
Total Reading	. . .	. . .	. . .	. . .	.2539**	.2382**
KD Proneness Scale . .	. . .	. . .	. . .	. . .	. . .	.3290**
Girls						
Behavior Rating	.1524*	.2280**	.2692**	.3051**	.3663**	.3047**
I.Q.	. . .	.6549**	.5571**	.6371**	.1545*	.0276
Vocabulary	. . .	. . .	.6227**	.8472**	.2025**	.1120
Paragraph Meaning . . .	. . .	. . .	. . .	.8443**	.1555*	.0729
Total Reading	. . .	. . .	. . .	. . .	.2151**	.1027
KD Proneness Scale . .	. . .	. . .	. . .	. . .	. . .	.2692**

*Significant at the 5% level of confidence.
**Significant at the 1% level of confidence.

TABLE 8.—Intercorrelations between the behavior rating, I.Q., vocabulary, paragraph meaning, total reading, KD Proneness Scale (non-verbal), and the after-data for 9th grade boys and girls

Variable	I.Q.	Vocabulary	Paragraph Meaning	Total Reading	KD Proneness Scale	After-Data
Boys						
Behavior Rating	.1699*	.1849**	.1431*	.1565*	.1579*	.3710**
I.Q.	. . .	.7059**	.6099**	.7087**	.0417	.0911
Vocabulary	. . .	. . .	.6618**	.8861**	.1024	.1594*
Paragraph Meaning	. . .	. . .	. . .	.8396**	.1241	.1271
Total Reading	. . .	. . .	. . .	. . .	.1612*	.1787**
KD Proneness Scale . .	. . .	. . .	. . .	. . .	. . .	.0451
Girls						
Behavior Rating	.3937**	.3096**	.2532**	.3481**	.1999**	.2993**
I.Q.	. . .	.6677**	.6582**	.7181**	.1682**	.1367*
Vocabulary	. . .	. . .	.6066**	.8835**	.2812**	.1504*
Paragraph Meaning	. . .	. . .	. . .	.8201**	.1769**	.0656
Total Reading	. . .	. . .	. . .	. . .	.2749**	.1321*
KD Proneness Scale . .	. . .	. . .	. . .	. . .	. . .	.2358**

*Significant at the 5% level of confidence.
**Significant at the 1% level of confidence.

boys in all grades the correlation between the teachers' Behavior Rating and the after-data is the highest of all the values, although it is, on the average, only in the order of .40. For 8th grade boys it approaches .50. For the girls this relationship is not nearly as marked. The highest correlation for the girls between the teachers' Behavior Rating and the after-data occurs for the 8th grade with a value of .30. An average for the girls for the three grades is in the order of .25. It would appear that teachers are better at predicting the future behavior of boys than they are for girls and that, for this particular study at least, the 8th grade teachers were very slightly better predictors than the 7th or 9th grade teachers.

The teachers' Behavior Rating correlates low with the KD Proneness Scale for both boys and girls. For both sexes the correlation is slightly higher for the 8th grade than with either the 7th or 9th grade. Indeed, for 8th grade girls the relationship between the Behavior Rating and the KD Proneness Scale is slightly higher than it is with the after-data. However, this is the only instance in which this relationship is true.

Of importance to this study is the relationship between the KD Proneness Scale and the after-data. For both boys and girls in each of the three grades the correlation between these two factors is low. For boys it ranges from .0451 for the 9th grade to a .3290 in the 8th grade. For girls it varies from .0985 for the 7th grade to .2692 for the 8th grade. Nor is there any consistency in the way the relationship varies according to grade or sex. The teachers' Behavior Rating has a higher correlation with the after-data than does the KD Proneness Scale in each instance. Teachers appear to be better at predicting outcomes of behavior than does the Scale.

Table 9 shows the intercorrelations between the Behavior Rating, the Binet I.Q., the KD Proneness Scale (non-verbal), and the after-data for the Malden Special Class.

TABLE 9.—Intercorrelations between the Behavior Rating, Stanford-Binet I.Q., the KD Proneness Scale (non-verbal), and the After-Data for the Malden Special Class boys and girls

	Boys		
Variable	Binet I.Q.	KD Proneness Scale	After-Data
Behavior Rating	.0120	.0772	.3492**
Binet I.Q.	. . .	.2639*	-.4052**
KD Proneness Scale	. . .	. . .	-.0950
	Girls		
Behavior Rating	-.2813	.3575*	.7960**
Binet I.Q.	. . .	.0471	-.1097
KD Proneness Scale	. . .	. . .	.2758

*Significant at the 5% level of confidence.
**Significant at the 1% level of confidence.

While the correlations between the Behavior Rating given by the teachers and the I.Q. is practically zero for the boys, it is -.2813 for the girls. For boys the relationship between the Behavioral Rating and the KD Proneness Scale is, again, almost negligible; it reaches a value of about .36 for the Special Class girls. The correlation between the Behavior Rating and the after-data is in the order of .35 for the Special Class boys, but it reaches a highly significant .796 for the girls. It may be assumed, then, that the Malden Special Class teachers are much better at predicting the subsequent behavior of their girls than they are of their boys. Or, the behavior at a given time for girls as rated by their teachers continues to be much the same while for boys it does not.

The KD Proneness Scale correlated in a very slightly negative direction with the after-data for boys and in a positive direction for girls in the order of .28. While the Binet I.Q. and after-data correlate at about -.4 for the boys, the value for the girls is -.11.

Table 10 shows the correlations for the same variables for the Fall River Special Class boys and girls.

TABLE 10.--Intercorrelations between the Behavior Rating, Stanford-Binet I.Q., the KD Proneness Scale (non-verbal), and the After-Data for the Fall River Special Class boys and girls

Variable	Binet I.Q.	KD Proneness Scale	After-Data
Boys			
Behavior Rating	.0164	-.1519	.2174*
Binet I.Q.	. . .	.1752	.1692
KD Proneness Scale . . .	. . .	. . .	.1992
Girls			
Behavior Rating	.0199	.1045	.0813
Binet I.Q.	. . .	.1132	-.0371
KD Proneness Scale . . .	. . .	. . .	-.0211

*Significant at the 5% level of confidence.

The values in this table are similarly low. The most significant relationship is that of the Behavior Rating and the after-data for the boys where the value reaches .22. For the girls, however, there is, in great contrast to the Malden Special Class girls, practically no correlation between Behavior Rating and after-data. The relationship between I.Q. and the KD Proneness Scale and the after-data is negligible for both sexes. The relationship between the KD Proneness Scale and the after-data, while low for both sexes, shows a trend to be more closely related for the boys than for the girls.

There is very little consistency of direction or amount in the relationship of these variables when girls are compared to boys, and no generalizations can be drawn about Special Class students in general. One fact does appear to emerge from the data. The Malden Special Class teacher appears to be able to predict the future outcomes of the behavior of her students better than can the Fall River Special Class teacher.

Analysis of Variance

The various data were next subjected to an analysis of variance. The technique, as used here, was to rank-order groups of the subjects according to one of the variables and see if a corresponding rank-order and significant difference among means was found on other variables. Since the study proposed to investigate the predictive ability of the KD Proneness Scale (non-verbal) in relation to delinquency proneness, intelligence, and verbal skills, analysis of variance will be made according to the after-data, I.Q., and Total Reading.

Analysis of Variance by Total Reading Ability

Table 11 shows the analysis of variance of the Behavior Rating, the KD Proneness Scale (non-verbal), and the after-data when the students are ranked in groups in order of their total reading ability. In Table 11 the grouping was done according to quartile standing. The number (N), the Mean ($\bar{X}$) and standard deviation (S.D.) are given for the boys according to grade. When the 245 seventh grade boys are so grouped, 68 of

TABLE 11.—Analysis of variance by Total Reading for graded boys

Total Reading Quartile		Behavior Rating			KD Proneness Scale (non-verbal)			After-Data (log transformation)		
		7	8	9	7	8	9	7	8	9
1st Quartile	$\bar{X}$	1.94	1.97	1.99	30.37	27.21	31.23	12.28	15.08	9.47
	SD	.48	.57	.51	10.56	9.85	10.03	23.85	24.49	19.93
	N	68	62	73	68	62	73	68	62	73
2nd Quartile	$\bar{X}$	1.98	2.24	2.18	32.65	28.36	30.79	17.35	14.64	13.90
	SD	.38	.70	.46	10.29	8.75	10.94	27.44	25.49	24.90
	N	63	33	61	63	33	61	63	33	61
3rd Quartile	$\bar{X}$	2.08	2.16	2.21	32.27	30.71	31.02	30.32	21.82	19.00
	SD	.40	.49	.58	9.84	9.85	10.41	27.44	31.52	26.14
	N	66	56	47	66	56	47	66	56	47
4th Quartile	$\bar{X}$	2.33	2.49	2.19	37.75	33.82	37.64	33.33	32.98	22.17
	SD	.51	.76	.52	8.41	10.53	11.06	32.71	34.28	30.31
	N	48	61	36	48	61	36	48	61	36
Total	$\bar{X}$	2.07	2.21	2.12	32.91	30.22	32.12	22.57	21.94	14.88
	SD	.46	.66	.52	10.23	10.24	10.83	29.56	30.56	25.12
	N	245	212	217	245	212	217	245	212	217
F-ratio . .		8.00**	7.25**	2.33	5.33**	4.95**	3.88**	7.57**	4.52**	2.64

**Significant at the 1% level of confidence.

them fall in the 1st or top quartile. These 68 have a mean Behavior Rating of 1.94 and a standard deviation (of Behavior Rating) of .48. The 2nd quartile of seventh grade boys numbered 63, and the Behavior Rating of that group had a mean of 1.98 and a standard deviation of .38, and so on. The values are inspected to see if there is a continuity of rank-orders of the means of the groups on the other variables. It is noted that 7th grade boys have means on the Behavior Rating of 1.94, 1.98, 2.08, and 2.33. These means indicate that there is a similar continuity rank-order of Behavior according to levels of reading ability. The best readers have the best Behavior Rating, the second-best readers have the second-best Behavior Rating, etc., down to the poorest readers who have the poorest Behavior Rating. An F-test shows that the differences among these four means of Behavior Rating are significant at the 1% level of confidence.

A similar continuity of rank-order does not hold for the means of the 8th grade boys on the Behavior Rating. It is noted that the 3rd quartile has a mean (2.16) less than that of the mean of the 2nd quartile (2.24). However, the F-test does indicate that these mean differences are significant at the 1% level. Similarly, the means of the 9th grade boys are not in continuous rank-order. The 4th quartile has a mean of 2.19, which is less than the 2.21 value of the 3rd quartile. The F-test is not significant at the 5% level for 9th graders. There is a general trend for the better readers to be ranked as behaving better by their teachers. The hypothesis that Behavior Ratings would vary according to reading ability is not confirmed throughout.

Observation of the mean values of the KD Proneness Scale reveals that the supposition that these scores will vary continuously according to reading ability is also not substantiated, while the general trend is for the students with the better reading skills to score lower on the KD Proneness Scale, the continuity fails to hold for the 3rd quartile of 7th grade boys and for the 2nd and 3rd quartiles of the 9th grade boys. It is continuous and in the direction anticipated for 8th grade boys. The F-tests indicate the differences among the means are significant at the 1% level. However, this is of no consequence unless the rank-order continuity is maintained.

The third section of Table 11 deals with the after-data. Because of the very skewed distribution of this variable, a log transformation was performed on the data. In all analyses of variance in this report, it is the log transformation of the after-data that is used. A hypothesis to be examined in regard to the after-data would be that the better the reader the better would be his behavior as reflected in an after-data score. And the successively poorer the student reads, the worse would be his behavior. With the exception of the 2nd quartile of the 8th grade, this assumption seems to hold true. The rank-order is continuous for the 7th and 9th grades. But the group mean differences are not significant at the 5% level for the 9th grade boys.

In reviewing Table 11, it is seen that, when 7th, 8th, and 9th grade boys are grouped according to reading quartile, there is a similar grouping for the 7th grade boys on the variables of Behavior Rating and after-data and for 8th grade boys on the KD Proneness Scale that has a continuous rank order difference significant at the 1% level. It is noted that the poorest readers, those who fall in the 4th quartile, do have the worst Behavior Rating, the highest score on the KD Proneness Scale, and the highest score on the after-data.

Table 12 shows the analysis of variance by total reading for the girls as Table 11 does for the boys. It is observed that the Behavior Ratings vary continuously in rank order according to the rank of reading ability for all three grades. The better the reader, the better the Behavior Rating by the teachers. The differences among the group means is not significant even at the 5% level for the 7th grade, but is significant at the 1% level for the 8th and 9th grades. It would appear that the teachers' rating of students' behavior is more closely related to the reading skills for girls than for boys.

When the values for the KD Proneness Scale are inspected it is seen that rank-order continuity of this variable with reading skills exists only for grade nine. The 3rd quartile of the 7th grade and the 2nd quartile of the 8th grade are not continuous in rank order. The F-tests indicate a statistically significant difference at the 1% level between the means for all three grades.

The after-data varies according to reading skill in continuous rank-order for the 7th and 9th grades. The mean differences among the groups are significant at the 1% level for the 7th grade but are not significant at the 5% level for the 9th grade according to the F-tests. The rank order continuity is broken for the 8th grade by the 3rd quartile. In the 7th grade, the group means for the 1st and 2nd quartiles are very similar—4.09 to 4.39. But for the 3rd and 4th quartiles the values jump to 12.02 and 20.04, respectively. It would seem, then, that there is little difference in the behavior of the upper half of this

TABLE 12.—Analysis of variance by Total Reading for graded girls

Total Reading Quartile		Behavior Rating			KD Proneness Scale (non-verbal)			After-Data (log transformation)		
		7	8	9	7	8	9	7	8	9
1st Quartile	X̄	1.88	1.81	1.79	13.65	17.64	15.57	4.09	2.77	6.61
	SD	.36	.44	.45	11.92	17.68	16.99	15.60	11.61	18.83
	N	68	47	56	68	47	56	68	47	56
2nd Quartile	X̄	1.93	1.98	2.02	15.53	16.87	20.34	4.36	11.84	10.79
	SD	.32	.34	.34	15.95	14.93	18.30	12.02	24.82	24.15
	N	55	62	62	55	62	62	55	62	62
3rd Quartile	X̄	1.97	2.03	2.15	13.58	24.27	23.49	12.02	6.63	14.94
	SD	.35	.41	.39	12.36	19.19	19.70	23.11	17.63	24.26
	N	64	60	68	64	60	68	64	60	68
4th Quartile	X̄	2.10	2.21	2.29	24.47	26.91	30.79	20.04	14.13	17.53
	SD	.50	.46	.67	19.15	17.72	19.87	29.32	23.58	25.77
	N	49	47	66	49	47	66	49	47	66
Total	X̄	1.96	2.01	2.07	16.31	21.28	22.87	9.61	8.92	12.75
	SD	.39	.43	.51	15.36	17.90	19.61	21.60	20.77	23.91
	N	236	216	252	236	216	252	236	216	252
F-ratio . .		2.50	6.50**	14.00**	6.40**	4.17**	6.98**	7.13**	3.08*	2.47

*Significant at the 5% level of confidence.
**Significant at the 1% level of confidence.

grade according to reading skill. There is a significant difference in the behavior of the bottom half of the grade in reading skills. The poorer the reader, the worse the behavior in the 7th grade.

Table 13 is a summary of the F-ratios of the analysis of variance by Total Reading quartile for boys and girls by grade. The statistical significance at the 5% and 1% levels is indicated. The rank-order continuity, if present, is indicated by the letter "C."

TABLE 13.--Summary of the F-ratios and rank-order continuity in the analysis of variance by Total Reading

Grade	Behavior Rating	KD Proneness Scale (non-verbal)	After-Data (log transformation)
Boys			
7	C8.00**	5.33**	C7.57**
8	7.25**	C4.95**	4.70**
9	2.33	3.88**	2.64
Girls			
7	C2.50	6.40**	C7.13**
8	C6.50**	4.17**	3.08*
9	C14.00**	C6.98**	C2.47

*Significant at the 5% level of confidence.
**Significant at the 1% level of confidence.

The five following conditions appear when the three variables are analyzed in relation to Total Reading ability: 1) there are 7 (out of 18) instances where the F-ratios are significant at the 1% level and there is rank-order continuity of the variable, 2) there are 6 instances where the F-ratio is significant at the 1% level but there is no continuity, 3) there is one instance where the F-ratio is significant at the 5% level but has no continuity, 4) there are two instances where the F-ratio is not significant at least to the 5% level but there is continuity, and 5) there are two instances where the F-ratio is not significant and there is no continuity of the variable under analysis.

Analysis of Variance by Intelligence

The data were next subjected to an analysis of variance when the students were grouped by I.Q. In making these groups, those students whose group I.Q.'s were greater than one standard deviation below the median were placed in the lowest group. Those students whose I.Q.'s fell within one standard deviation below the median score were placed in the second group. Those whose I.Q.'s fell within one standard deviation above the median were placed in the third group, and those whose I.Q.'s were greater than one standard deviation above the median were in the fourth or highest group. With the subjects arranged thus by intelligence, an analysis of the variance was made on the variables Behavior Rating, Vocabulary, Paragraph Meaning, Total Reading, KD Proneness Scale (non-verbal), and the after-data.

Table 14 through Table 16 show the results of such analyses for the boys in grades 7 through 9, respectively.

Table 14 indicates that the group means differ significantly at the 1% level of confidence as indicated by the F-ratios and that there is rank-order continuity of all the variables when compared to the intelligence groupings. It is noted that the F-ratios for Vocabulary, Paragraph Meaning, and Total Reading are quite large. This would be expected, since it has already been seen from Table 6 that there is a high correlation between these verbal factors and intelligence.

TABLE 14.--Analysis of variance by I.Q. for grade 7 boys

I.Q. Group		Behavior Rating	Vocabulary	Paragraph Meaning	Total Reading	KD Proneness Scale	After-Data
Greater than 1 SD below median (N = 36)	$\bar{X}$ SD	2.36 .53	3.53 .73	3.44 .72	3.67 .53	37.33 9.47	33.81 30.36
Within 1 SD below median (N = 92)	$\bar{X}$ SD	2.08 .47	2.63 .91	2.82 .90	2.75 .82	33.23 9.75	25.41 31.13
Within 1 SD above median (N = 75)	$\bar{X}$ SD	2.01 .42	1.97 .86	1.95 .89	1.97 .91	33.13 10.87	22.08 29.67
Greater than 1 SD above median (N = 42)	$\bar{X}$ SD	1.88 .32	1.40 .73	1.33 .64	1.21 .60	28.05 8.58	9.76 18.19
Group Total (N = 245)	$\bar{X}$ SD	2.07 .46	2.35 1.06	2.39 1.08	2.38 1.09	32.91 10.23	22.57 29.56
F-ratio		8.00**	50.14**	56.29**	78.67**	5.74**	4.67**

**An F-ratio of 2.65 is significant at the 5% level of confidence; an F-ratio of 3.87 is significant at the 1% level of confidence; degrees of freedom: 3/241.

TABLE 15.--Analysis of variance by I.Q. for grade 8 boys

I.Q. Group		Behavior Rating	Vocabulary	Paragraph Meaning	Total Reading	KD Proneness Scale	After-Data
Greater than 1 SD below median (N = 25)	$\bar{X}$	2.52	3.68	3.80	3.80	36.36	26.80
	SD	.81	.47	.40	.40	10.69	32.31
Within 1 SD below median (N = 82)	$\bar{X}$	2.26	3.13	3.26	3.26	30.90	26.96
	SD	.64	.87	.84	.82	10.06	32.47
Within 1 SD above median (N = 70)	$\bar{X}$	2.17	1.97	2.04	1.96	27.56	21.51
	SD	.68	.84	.95	.92	9.31	30.46
Greater than 1 SD above median (N = 35)	$\bar{X}$	1.97	1.20	1.23	1.17	29.54	7.57
	SD	.45	.47	.54	.51	10.00	17.42
Group Total (N = 212)	$\bar{X}$	2.21	2.50	2.58	2.55	30.22	21.94
	SD	.66	1.13	1.18	1.19	10.24	30.56
F-ratio		4.00**	81.50**	88.17**	95.00**	5.00**	3.65*

*An F-ratio of 2.65 is significant at the 5% level of confidence.
**An F-ratio of 3.88 is significant at the 1% level of confidence; degrees of freedom: 3/208.

TABLE 16.--Analysis of variance by I.Q. for grade 9 boys

I.Q. Group		Behavior Rating	Vocabulary	Paragraph Meaning	Total Reading	ED Proneness Scale	After-Data
Greater than 1 SD below median (N = 21)	X̄	2.19	3.48	3.19	3.52	38.29	22.43
	SD	.39	.85	.79	.73	10.67	27.23
Within 1 SD below median (N = 83)	X̄	2.17	2.76	2.54	2.70	30.16	14.22
	SD	.58	.87	1.02	.91	9.87	25.25
Within 1 SD above median (N = 69)	X̄	2.12	1.88	1.93	1.88	31.52	14.49
	SD	.40	.91	.86	.91	11.13	25.37
Greater than 1 SD above median (N = 44)	X̄	2.02	1.18	1.25	1.18	33.84	13.16
	SD	.62	.39	.53	.39	10.85	22.67
Group Total (N = 217)	X̄	2.12	2.23	2.15	2.21	32.12	14.88
	SD	.52	1.08	1.05	1.08	10.83	25.12
F-ratio		.67	53.57**	31.13**	52.29**	3.74*	.72

*An F-ratio of 2.65 is significant at the 5% level of confidence.
**An F-ratio of 3.88 is significant at the 1% level of confidence; degrees of freedom: 3/213.

Table 15 shows the analysis of variance for the 8th grade boys. The F-ratios are significant at the 1% level on all of the variables except the after-data where it reaches only the 5% level of confidence. However, there is not the rank-order continuity among the group means of two of the variables. It is noted that the brightest group has a higher mean score than the next-to-the-highest group on the KD Proneness Scale. The second group has a slightly higher score than the lowest group on the after-data. Again, for grade 8 as for grade 7, the F-ratios for the verbal skills are very high. The Behavior Rating has an F-ratio significant at the 1% level and also has continuity.

Table 16 shows the analysis of variance for the 9th grade boys. While there is a rank-order continuity of the differences among the means of the Behavior Rating, the F-ratio is not significant at the 5% level. The verbal skills maintain the continuity and, as with the two lower grades, the F-ratios are high. The F-ratio for the KD Proneness Scale is significant at the 5% level, but this fact is meaningless because there is no rank-order continuity. The differences among the means on the after-data variable are not significant even at the 5% level and rank-order continuity is not maintained.

It is interesting to note that, although there is rank-order continuity for each of the three grades on the Behavior Rating variable, the F-ratio decreases as one goes from grade 7 to grade 9 when the subjects are arranged by intelligence. The groups appear to become somewhat more homogeneous as the students move upwards in grade. From the intercorrelations in Tables 6, 7, and 8 it is seen that the relationship between the Behavior Rating and Intelligence decreases from grade 7 to grade 9. The Behavior Rating is a subjective score made by the teacher. It would be suspected that the longer the teacher knew the student, the better she would be able to judge his behavior. It appears that, for the graded boys at least, teachers tend not to base their judgments of behavior on the intelligence of the students the more familiar they become with them.

Tables 17, 18, and 19 show the results of the analysis of variance of the same variables when the graded girls are grouped according to intelligence. Table 17 indicates that the Behavior Rating for 7th grade girls maintains a continuous rank order difference among the groups but that it is significant only at the 5% level. As was the case with the boys, the verbal skills, Vocabulary, Paragraph Meaning, and Total Reading, do vary with intelligence and at better than the 1% level of confidence. While rank-order continuity is maintained among the groups on the KD Proneness Scale, the F-test reveals that the differences among the means is not significant. The difference among the means on the after-data is statistically significant, but it is meaningless since continuity is not maintained.

Table 18 for 8th grade girls shows a continuous rank-order difference among the means for the Behavior Rating, but the F-ratio indicates these differences are not significant. The verbal skills maintain continuity and significance as in the earlier grade. Neither the KD Proneness Scale nor the after-data show rank-order continuity and neither has a significant F-ratio.

Table 19 shows that the Behavior Rating for 9th grade girls varies with intelligence at better than the 1% level of confidence and that

TABLE 17.--Analysis of variance by I.Q. for grade 7 girls

I.Q. Group		Behavior Rating	Vocabulary	Paragraph Meaning	Total Reading	KD Proneness Scale	After-Data
Greater than 1 SD below median (N = 28)	$\bar{X}$	2.18	3.68	3.75	3.75	21.82	22.89
	SD	.47	.71	.57	.57	20.43	30.42
Within 1 SD below median (N = 87)	$\bar{X}$	1.97	2.92	2.83	2.91	17.17	9.10
	SD	.38	.92	.92	.84	14.27	20.27
Within 1 SD above median (N = 80)	$\bar{X}$	1.93	2.09	2.01	1.99	15.23	9.70
	SD	.38	.96	.87	.92	15.46	22.09
Greater than 1 SD above median (N = 41)	$\bar{X}$	1.88	1.46	1.27	1.20	12.85	1.46
	SD	.33	.63	.54	.40	11.74	6.46
Group Total (N = 236)	$\bar{X}$	1.96	2.47	2.39	2.40	16.31	9.61
	SD	.39	1.11	1.10	1.11	15.36	21.60
F-ratio		3.00*	46.50**	62.57**	81.50**	2.14	5.80**

*An F-ratio of 2.65 is significant at the 5% level of confidence.
**An F-ratio of 3.87 is significant at the 1% level of confidence; degrees of freedom: 3/232.

TABLE 18.—Analysis of variance by I.Q. for grade 8 girls

I.Q. Group		Behavior Rating	Vocabulary	Paragraph Meaning	Total Reading	KD Proneness Scale	After-Data
Greater than 1 SD below median (N = 29)	$\bar{X}$	2.10	3.45	3.31	3.31	27.10	12.07
	SD	.30	.81	.95	.88	17.32	20.24
Within 1 SD below median (N = 78)	$\bar{X}$	2.08	3.01	2.90	2.97	22.04	7.97
	SD	.42	.84	.96	.86	17.62	19.66
Within 1 SD above median (N = 67)	$\bar{X}$	1.96	2.19	2.27	2.25	18.64	10.54
	SD	.44	.92	.86	.87	17.05	22.84
Greater than 1 SD above median (N = 42)	$\bar{X}$	1.90	1.45	1.52	1.43	20.05	5.90
	SD	.48	.76	.85	.73	19.06	19.10
Group Total (N = 216)	$\bar{X}$	2.01	2.51	2.49	2.50	21.28	8.92
	SD	.43	1.08	1.08	1.06	17.90	20.77
F-ratio		2.00	47.14**	31.25**	42.29**	1.63	.70

**An F-ratio of 2.65 is significant at the 5% level; an F-ratio of 3.88 is significant at the 1% level of confidence; degrees of freedom: 3/212.

TABLE 19.—Analysis of variance by I.Q. for grade 9 girls

I.Q. Group		Behavior Rating	Vocabulary	Paragraph Meaning	Total Reading	KD Proneness Scale	After-Data
Greater than 1 SD below median (N = 32)	$\bar{X}$	2.44	3.72	3.75	3.81	27.22	21.03
	SD	.79	.45	.50	.46	16.60	29.14
Within 1 SD below median (N = 94)	$\bar{X}$	2.14	2.94	2.96	3.03	24.02	12.87
	SD	.37	.92	1.01	.86	20.47	21.59
Within 1 SD above median (N = 85)	$\bar{X}$	1.99	2.20	2.12	2.19	21.80	13.28
	SD	.47	.99	.95	.93	19.99	26.05
Greater than 1 SD above median (N = 41)	$\bar{X}$	1.80	1.37	1.44	1.34	19.02	4.88
	SD	.40	.57	.70	.57	18.03	16.10
Group Total (N = 252)	$\bar{X}$	2.07	2.53	2.53	2.57	22.87	12.75
	SD	.51	1.11	1.14	1.10	19.61	23.91
F-ratio		13.50**	59.71**	53.38**	68.43**	1.24	2.83*

*An F-ratio of 2.65 is significant at the 5% level of confidence.
**An F-ratio of 2.87 is significant at the 1% level of confidence; degrees of freedom: 3/248.

there is continuity in the rank-order of the group means. The same fact is true for the verbal skills in this grade as in the two lower ones. There is continuity of the rank-order of the means on the KD Proneness Scale, but the differences among the four means are not statistically significant. For the after-data with the 9th grade girls, the differences among the mean scores is significantly different at the 5% level of confidence, but there is not complete continuity of the rank-order.

As was true with the boys for grades 7, 8, and 9, the girls' Vocabulary, Paragraph Meaning, and Total Reading skills also vary according to intelligence and at a significantly high level. For both boys and girls of all three grades there is a general trend for the duller students to have been given a poorer Behavior Rating by their teachers. There is also a trend, although it is only a very general one, for the duller students to score higher on the KD Proneness Scale and to have a higher score on the after-data. Since the after-data represents their actual behavior, it would appear that there may be a tendency for the duller student to get into more trouble in the graded classes. The discontinuity of rank-order differences among the means of the four groups (by I.Q.) on the KD Proneness Scale variable appears to be not in the two lowest groups intelligence-wise, but, rather, when discontinuity does occur it is in the two brightest groups. This fact is true for both the boys and the girls. The discontinuity on the after-data variable occurs with the next-to-the-lowest and next-to-the-highest groups. Because of the ordinal position of the two extreme groups it is not certain how much their mean value affects the continuity of the other groups.

Table 20 shows the analysis of variance by Binet I.Q. for the boys in the Fall River Special Class on the Behavior Rating, KD Proneness Scale (non-verbal), and after-data variables.

TABLE 20.--Analysis of variance by I.Q. for the Fall River Special Class boys

I.Q. Groups		Behavior Rating	KD Proneness Scale (non-verbal)	After-Data (log transformation)
Greater than 1 SD below median (N = 12)	$\bar{X}$	2.83	50.50	36.25
	SD	.69	8.72	39.11
Within 1 SD below median (N = 26)	$\bar{X}$	2.35	44.77	18.65
	SD	.78	11.50	30.09
Within 1 SD above median (N = 27)	$\bar{X}$	2.74	43.11	12.22
	SD	.84	11.00	29.45
Greater than 1 SD above median (N = 12)	$\bar{X}$	2.58	43.67	24.58
	SD	.86	6.13	37.72
Group Total (N = 77)	$\bar{X}$	2.60	44.91	20.06
	SD	.83	10.54	34.33
F-ratio*		1.29	1.45	1.45

*An F-ratio of 2.73 is significant at the 5% level of confidence; an F-ratio of 4.06 is significant at the 1% level of confidence; degrees of freedom: 3/73.

It is noted that there is not a statistically significant difference among the group means for any of the variables. Nor is rank-order continuity maintained on any of the variables. It is of interest that the discontinuity on the KD Proneness Scale and the after-data occurs with the brightest group. While the mean score on the KD Proneness Scale for the brightest group is not greatly different from the second-brightest group, it is numerically higher. The after-data score of the brightest group is higher than all but the very dullest group.

Table 21 shows a similar analysis for the Malden Special Class boys.

TABLE 21.--Analysis of variance by I.Q. for the Malden Special Class boys

I.Q. Groups		Behavior Rating	KD Proneness Scale (non-verbal)	After-Data (log transformation)
Greater than 1 SD below median (N = 11)	$\bar{X}$ SD	2.00 .60	45.91 9.83	17.27 21.78
Within 1 SD below median (N = 19)	$\bar{X}$ SD	2.16 .67	42.89 7.35	27.95 35.73
Within 1 SD above median (N = 24)	$\bar{X}$ SD	2.21 [illegible]	42.04 8.47	57.92 28.48
Greater than 1 SD above median (N = 5)	$\bar{X}$ SD	1.80 1.17	41.80 11.21	46.00 38.26
Group Total (N = 59)	$\bar{X}$ SD	2.12 .85	43.02 8.79	39.68 35.07
F-ratio		.38	.51	5.32*

*An F-ratio of 2.78 is significant at the 5% level of confidence; an F-ratio of 4.16 is significant at the 1% level of confidence; degrees of freedom: 3/55.

There is no significant difference among the means on the Behavior Rating variable as indicated by the very low F-ratio, nor is there rank-order continuity of the differences. There is rank-order continuity on the KD Proneness Scale, but the differences among the means is not significant. In contrast with what would be expected, and with the trend found in the Fall River group, the Malden Special Class boys seem to have reversed the rank-order of mean values on the after-data. The dullest group has the lowest mean score on after-data. The next to the dullest group has the next to the lowest mean score on this variable. The two brightest groups have decidedly higher mean values than the two lowest. The brightest group does not have as high a mean value as does the next to the highest. If the tables for both Fall River and Malden Special Classes are inspected together in regard to the after-data, it would seem that there may be a tendency for the brighter boy to get into more trouble. These boys may well be marginal students who might function far better in a graded situation than in a Special Class. Some of these students had fairly high I.Q.'s for Special Class placement. One might wonder in how many instances a marginal child is placed in a Special Class because he is a behavior problem.

Table 22 shows the analysis of variance by I.Q. for the Malden Special Class girls on the variables Behavior Rating, KD Proneness Scale (non-verbal), and after-data. On the Behavior Rating there is rank-order continuity of the mean values, but the differences are not statistically significant. It is noted that the rank-order is reversed from what would be expected of the graded students. The dullest group of students has the "best" Behavior Rating, while the brightest of the four groups has the "worst" rating. On the KD Proneness Scale and the after-data there is neither rank-order continuity nor a significant difference among the group means. Table 22 appears to offer only the interesting fact that, when the Special Class girls in Malden are arranged by level of intelligence, there is an inverse variance with their Behavioral Rating made by their teachers.

There is no table for the Fall River girls in Special Class because the data was distributed in a manner that would not permit the

TABLE 22.--Analysis of variance by I.Q. for the Malden Special Class girls

I.Q. Groups		Behavior Rating	KD Proneness Scale (non-verbal)	After-Data (log transformation)
Greater than 1 SD below median (N = 6)	$\bar{X}$ SD	2.17 .37	24.50 5.71	28.00 31.30
Within 1 SD below median (N = 10)	$\bar{X}$ SD	2.50 .92	26.40 13.73	48.60 29.41
Within 1 SD above median (N = 12)	$\bar{X}$ SD	2.67 .75	26.58 17.03	40.33 32.44
Greater than 1 SD above median (N = 5)	$\bar{X}$ SD	2.80 .75	18.60 13.00	46.80 29.73
Group Total (N = 33)	$\bar{X}$ SD	2.55 .78	24.94 14.21	41.58 31.78
F-ratio*		.83	.39	.44

*An F-ratio of 2.93 is significant at the 5% level of confidence; an F-ratio of 4.54 is significant at the 1% level of confidence; degrees of freedom: 3/29.

necessary groupings.

Table 23 summarizes the F-ratios and continuity of rank-order differences among means on the several variables explored above in Table 14 through Table 22. In review it is seen at a glance that the verbal skills--Vocabulary, Paragraph Meaning, and Total Reading--are significant at the 1% level of confidence and show continuity (C) throughout each grade and for both sexes. For the graded students there is continuity on the KD Proneness Scale only for the 7th grade boys, and the mean differences are significant. There is continuity for the 7th and 9th grade girls but the differences are not significant. The after-data shows both continuity and significance only for the 7th

TABLE 23.—Summary of F-ratios and rank-order continuity in the analysis of variance by I.Q.

Grade	Behavior Rating	Vocabulary	Paragraph Meaning	Total Reading	KD Proneness Scale (non-verbal)	After-Data
Boys						
7	C8.00**	C50.14**	C56.29**	C78.67**	C5.74**	C4.67**
8	C4.00**	C81.50**	C88.17**	C95.00**	5.00**	3.65*
9	C .67	C53.57**	C31.13**	C52.29**	3.74*	.72
Girls						
7	C3.00*	C46.50**	C62.57**	C81.50**	C2.14	5.80**
8	C2.00	C47.14**	C31.25**	C42.29**	1.63	.70
9	C13.50**	C59.71**	C53.38**	C68.43**	C1.24	2.83*
Special Classes						
Fall River Boys .	1.29	. . .	. . .	. . .	1.45	1.45
Malden Boys . . .	.38	. . .	. . .	. . .	C .51	R5.32**
Malden Girls . .	RC .83	. . .	. . .	. . .	.39	.44

No Fall River girls because the distribution of data did not permit necessary groupings.

*Significant at 5% level of confidence.

**Significant at 1% level of confidence.

Boston University
School of Education
Library

grade boys.

The 7th grade boys appear to function as might by hypothesized on each of the variables under investigation, while the 8th and 9th graders do not. These are the youngest students. Their school program may be more suitable for them. As they move upward in grade and approach a time when they might drop out of school, the more vulnerable of them may become more of a social problem. The school program, then, becomes less efficacious for these students. The patterning of the results would indicate that little can be learned from scores on the KD Proneness Scale (non-verbal) or the after-data.

Analysis of Variance by After-Data Grouping

The next step in the analysis of the data was to categorize the students in accordance with types of offenses recorded in the after-data. It was decided to make four categories indicated as follows: 0 = those subjects for whom no offenses of any kind were recorded during the three-year period of the study. 1 = those students for whom only school offenses were recorded. 2 = those students for whom both school and community offenses were recorded but for whom no "legal action" was taken. 3 = those students for whom "legal action" was taken. It was felt that this division of offenses represented an increase in the severity of the nature of the offenses--from "no offense" through "legal action."

Table 24 shows the number, mean, and standard deviation of the total male students when grouped according to the above categories of after-data on the variables Behavior Rating, Group I.Q., Vocabulary, TABLE 24.--Means and standard deviations by after-data grouping for the total graded male population

After-Data Grouping*		Behavior Rating	Group I.Q.	Vocabulary	Paragraph Meaning	Total Reading	KD Proneness Scale (non-verbal)
Group 0	$\bar{X}$	1.95	103.21	2.17	2.20	2.18	30.29
(N = 413)	SD	.41	11.93	1.05	1.09	1.08	10.28
Group 1	$\bar{X}$	2.33	99.33	2.61	2.51	2.57	33.76
(N = 153)	SD	.58	12.77	1.12	1.12	1.15	10.12
Group 2	$\bar{X}$	2.57	96.29	2.81	2.84	2.93	35.69
(N = 68)	SD	.65	11.00	1.07	1.08	1.02	11.02
Group 3	$\bar{X}$	2.48	96.98	2.58	2.80	2.83	33.45
(N = 40)	SD	.74	11.01	1.05	1.05	1.07	9.96

*After-data grouping:
0 = no offenses
1 = school offense only
2 = school offense plus community offense (no legal)
3 = legal offense.

Paragraph Meaning, Total Reading, and KD Proneness Scale (non-verbal). F-tests were not made from these data because inspection of Table 24 reveals that on every single variable, what was thought to be the severest offending group, the Legal Offense group, breaks the rank-order continuity of the mean scores. The continuity holds up through group 2, but then it falls off in each instance for group 3.

The Legal Offense group merits special consideration here. It is noted that the mean of this group on the Behavior Rating variable is 2.48. This value falls between the means of group 1 and group 2 about the middle of the distribution. It could be said, then, that the legal offender was rated about average in behavior by his teacher.

It is noted that the mean I.Q. for group 3 also falls between groups 1 and 2. The boy in group 3 is not as bright, on the average, as those who had school offenses only, but is slightly brighter than those who committed both school and community offenses. His Paragraph Meaning and Total Reading skills fall at the same place in the group distribution.

The vocabulary of the legal offender group is better than all but those who had no offenses of any kind. And, surprisingly enough, his score on the KD Proneness Scale is lower than either the school offender or the school-and-community offender. It would seem that the legal offender is a unique individual and that he is not readily identifiable by any of the variables under discussion. Perhaps the question should be raised as to why these boys became labeled legal offenders. What are the factors in the environment, in the way their offenses were handled, that might be different from the way the "non-legal" offenders were handled that might have resulted in their ending up in a court action? These external factors could well be scrutinized.

Table 25 lists the distribution for the same variables when all of the girl students are grouped into the same after-data categories. Here it appears that group 2, the school-plus-community, is generally out of place in the rank-order of mean scores. Table 25 would indicate that the girls who commit both school and community offenses have a better Behavioral Rating than all but group 0 with no offenses listed. Likewise, their verbal skills are better than all but those with no offenses. They are brighter and have a higher I.Q. than all but the no offender group. Their mean score on the KD Proneness Scale is only slightly higher than the group with school offenses only.

If it is assumed that scores on the KD Proneness Scale arranged on a continuum from lowest to highest would indicate degrees of behavior from best to worst, respectively, the data presented in Table 24 and Table 25 for the total graded population would tend to indicate that the assumption concerning the KD Proneness Scale is not valid. While a trend is apparent, it is not sufficient for predictive purposes.

Table 26 shows the distribution of means and the standard deviations of the Fall River Special Class boys on the variables Behavior Rating, Stanford-Binet I.Q., and the KD Proneness Scale (non-verbal) when arranged by the after-data groups used above. The same discontinuity of rank-order of means that occurred in the Legal Offense group in the graded male population is evident in the Fall River Special Class

TABLE 25.--Means and standard deviations by after-data grouping for the total graded female population

After-Data Grouping*		Behavior Rating	Group I.Q.	Vocabulary	Paragraph Meaning	Total Reading	KD Proneness Scale (non-verbal)
Group 0	$\bar{X}$	1.95	102.87	2.37	2.37	2.36	18.16
(N = 553)	SD	.37	11.58	1.08	1.11	1.08	16.19
Group 1	$\bar{X}$	2.27	95.71	3.09	2.93	3.06	26.20
(N = 98)	SD	.56	10.61	1.02	.99	.93	20.19
Group 2	$\bar{X}$	2.21	100.74	2.65	2.53	2.65	30.95
(N = 43)	SD	.67	11.18	1.03	1.11	1.08	24.02
Group 3	$\bar{X}$	2.50	92.60	3.60	3.10	3.40	26.60
(N = 10)	SD	.81	10.97	.66	1.04	.80	25.71

*After-data grouping:
0 = no offenses
1 = school offense only
2 = school offense plus community offense (no legal)
3 = legal offense.

TABLE 26.--Means and standard deviations by after-data grouping for the Fall River Special Class boys

After-Data Grouping*		Behavior Rating	Binet I.Q.	KD Proneness Scale (non-verbal)
Group 0	X̄	2.48	71.96	43.27
(N = 56)	SD	.78	11.76	10.96
Group 1	X̄	2.67	67.67	50.67
(N = 3)	SD	.47	13.47	7.93
Group 2	X̄	3.00	63.14	51.00
(N = 7)	SD	.76	7.90	5.63
Group 3	X̄	2.91	67.91	47.82
(N = 11)	SD	1.00	16.31	8.62

*After-data grouping:
0 = no offenses
1 = school offense only
2 = school offense plus community offense (no legal)
3 = legal offense.

boys. Their mean Behavior Rating places the Legal Offense group between groups 1 and 2 on that variable. In short, they fall nearer the middle of the Behavior Rating distribution than the severity of their behavior would indicate. As a group, they are brighter than all but those who had no offenses at all. Their mean score on the KD Proneness Scale is lower than either the School offenders or the School-and-Community offenders.

No table is presented for the Fall River Special Class girls because the after-data distribution of the girls did not lend itself to the four categories used.

Table 27 shows the distribution by after-data groupings for the Malden Special Class boys and girls. For the boys, it is noted that the mean score on the Behavior Rating variable for group 1 is lower in

TABLE 27.--Means and standard deviations by after-data grouping for the Malden Special Class boys and girls

After-Data Grouping*		Boys			Girls		
		Behavior Rating	Binet I.Q.	KD Proneness Scale (non-verbal)	Behavior Rating	Binet I.Q.	KD Proneness Scale (non-verbal)
Group 0	$\bar{X}$	2.00	66.19	44.95	1.90	69.80	19.80
(N = 21)	SD	.76	12.81	7.77	.30	9.80	4.51
Group 1	$\bar{X}$	1.77	71.62	43.00	2.27	72.91	23.91
(N = 13)	SD	.58	10.36	9.89	.45	7.91	9.57
Group 2	$\bar{X}$	2.12	76.35	40.76	3.33	72.50	30.17
(N = 17)	SD	.76	7.76	9.84	.62	7.32	20.10
Group 3	$\bar{X}$	3.00	78.38	42.75	. . .	. . .	. . .
(N = 8)	SD	1.00	5.94	5.14	. . .	. . .	. . .

*After-data grouping:
0 = no offenses
1 = school offense only
2 = school offense plus community offense (no legal)
3 = legal offense.

numerical value than that for group 0. It is noted that there is a continuous rank-order difference among the means of the four groups on the Stanford-Binet I.Q. But the rank-order is reversed from that which was observed for the graded students. Here we see that the dullest students are the lily whites with no offenses, while the brightest students are found in the 3rd group, that involved in legal offenses. The mean scores on the KD Proneness Scale (non-verbal) are also in reverse order from what would be anticipated. Those boys with no offenses have the highest mean score on the KD Proneness Scale as a group. Those with school-and-community (but not legal) offenses have the lowest KD Proneness score. The legal group falls somewhere in the middle of this distribution.

It is seen that no girls from the Malden Special Class fell into group 3--the legal offense group. For the girls the Behavior Ratings are distributed as would be expected, and they are in continuous rank-order. The dullest girls have the cleanest behavior records. The school offense group is the brightest. Scores on the KD Proneness Scale are in continuous rank-order, and the order is in the anticipated direction for graded pupils. That is, the No Offense group has the lowest KD Proneness score, while the scores of group 1 and group 2 increase with severity of offenses. It is to be recalled that the higher the score on the KD Proneness Scale, the more vulnerable is the student.

One trend seems to emerge from Table 27. It would appear that, generally, the duller the student, the better behaved he is. This is in support of the idea that was presented earlier concerning the "brighter" student in the Special Class setting.

Analysis of Variance by Regrouped After-Data

From the distribution of the mean values in Table 24 for the total graded male population, it appeared that group 3, those students whose offenses had received legal action, should more properly fall between groups 1 and 2. It was decided to combine the Legal offenders of group 3 with the School-and-Community offenders and do an analysis of variance on the several variables with the subjects regrouped in this manner.

Table 28 shows the results of the analysis of variance when the total male population is regrouped into the three indicated categories. It is noted that there is now rank-order continuity of the means in the direction anticipated and that the differences among the means is significant at the 1% level of confidence on each of the variables. The direction is from the best behaving boys in group 0 who have the best Behavior Rating, have the highest I.Q., have the best verbal skills, and score the lowest on the KD Proneness Scale, down to group 2, the worst behaving children who have the poorest Behavior Rating, the lowest I.Q., the weakest verbal skills, and the highest or most vulnerable KD Proneness Scale score.

When the girl Legal offenders are combined with the School-plus-Community offenders in group 2, the same results found with the boys do not appear. Table 29 shows the results of the analysis of variance for the total graded female population when the subjects are regrouped into only three after-data categories. It is noted that the mean values for groups 1 and 2 appear to be interchanged on all variables except the KD Proneness Scale. This result might have been anticipated because Table 25 indicated that the girl Legal offenders more correctly fall, TABLE 28.--Analysis of variance by after-data grouping for the total graded male population

After-Data Grouping*		Behavior Rating	Group I.Q.	Vocabulary	Paragraph Meaning	Total Reading	KD Proneness Scale (non-verbal)
Group 0	$\bar{X}$	1.95	103.21	2.17	2.20	2.18	30.29
(N = 413)	SD	.41	11.93	1.05	1.09	1.08	10.28
Group 1	$\bar{X}$	2.33	99.33	2.61	2.51	2.57	33.76
(N = 153)	SD	.58	12.77	1.12	1.12	1.15	10.12
Group 2	$\bar{X}$	2.54	96.55	2.72	2.82	2.89	34.86
(N = 108)	SD	.69	11.01	1.07	1.07	1.04	10.69
Total	$\bar{X}$	2.13	101.26	2.36	2.37	2.38	31.81
(N = 674)	SD	.56	12.26	1.10	1.12	1.13	10.49
F-ratio		61.67**	15.73**	16.08**	15.33**	21.08**	11.88**

*After-data grouping:
0 = no offenses
1 = school offense only
2 = school offense plus community offenses plus legal offenses.

**Significant at the 1% level of confidence.

TABLE 29.--Analysis of variance by after-data grouping for the total graded female population

After-Data Grouping*		Behavior Rating	Group I.Q.	Vocabulary	Paragraph Meaning	Total Reading	KD Proneness Scale (non-verbal)
Group 0	$\bar{X}$	1.95	102.87	2.37	2.37	2.36	18.16
(N = 553)	SD	.37	11.58	1.08	1.11	1.08	16.19
Group 1	$\bar{X}$	2.27	95.71	3.09	2.93	3.06	26.20
(N = 98)	SD	.56	10.61	1.02	.99	.93	20.19
Group 2	$\bar{X}$	2.26	99.21	2.83	2.64	2.79	30.13
(N = 53)	SD	.70	11.59	1.04	1.12	1.07	24.40
Total	$\bar{X}$	2.02	101.60	2.51	2.47	2.49	20.18
(N = 704)	SD	.45	11.73	1.10	1.11	1.09	17.97
F-ratio		30.00**	17.42**	22.27**	11.42**	21.00**	17.92**

*After-data grouping:
0 = no offenses
1 = school offenses only
2 = school offenses plus community offenses plus legal offenses.

**Significant at the 1% level of confidence.

according to mean scores, between groups 0 and 1, except possibly on I.Q. and the KD Proneness Scale. The F-ratios, significant at the 1% level, are meaningless to the prediction study because of the lack of rank-order continuity among the means. It could be said, from an inspection of both Table 25 and Table 29 that the girls whose behavior becomes a matter of legal record are, in general, more like those girls who never get into trouble at all or who commit school offenses only.

Those students, both boys and girls, whose behavior ultimately brings them in contact with the law appear to be a unique group--at least when they are measured by the several variables under discussion here. Speculation can be raised, on the one hand, whether or not these subjects can be identified with such objective measures as have been employed in this study and, on the other hand, whether they truly are the worst behaved group or whether there may not have been external factors in the environment that resulted in their becoming a court case while other perhaps equally "bad" students escaped this procedure. It would appear from these data that only speculation can be made and that these possibilities might be subject to further investigation.

Table 30 shows the results of the analysis of variance for the Malden Special Class boys and girls when the after-data grouping has been rearranged to include the Legal offenders in group 2. This table is the same as Table 27 except that the means and standard deviations for group 2 have changed. The same discontinuity exists for the boys in group 1 on the Behavior Rating, and the same reverse-order from that anticipated is seen in the rank-order of means on the Binet I.Q. and KD Proneness Scale. The F-ratios show the differences among the means

TABLE 30.--Analysis of variance by after-data grouping for the Malden Special Class boys and girls

After-Data Grouping		Boys			Girls		
		Behavior Rating	Binet I.Q.	KD Proneness Scale (non-verbal)	Behavior Rating	Binet I.Q.	KD Proneness Scale (non-verbal)
Group 0	$\bar{X}$	2.00	66.19	44.95	1.90	69.80	19.80
(N = 21)	SD	.76	12.81	7.77	.30	9.80	4.51
Group 1	$\bar{X}$	1.77	71.62	43.00	2.27	72.91	23.91
(N = 13)	SD	.58	10.36	9.89	.45	7.91	9.57
Group 2	$\bar{X}$	2.40	77.00	41.40	3.33	72.50	30.17
(N = 25)	SD	.94	7.29	8.67	.62	7.32	20.10
Total	$\bar{X}$	2.12	71.97	43.02	2.55	71.82	24.94
(N = 59)	SD	.85	11.28	8.79	.78	8.44	14.21
F-ratio		2.86	6.07*	.91	20.67**	.39	1.49

After-data grouping:
0 = no offenses
1 = school offenses only
2 = school offenses plus community offenses plus legal offenses.

*Significant at the 5% level of confidence.
**Significant at the 1% level of confidence.

to be significant at the 5% level on the Binet I.Q. variable.

For the girls Table 30 is identical with that of Table 27 because there had been no group 3 legal offenders in Table 27. It is seen from Table 30 that a significant difference at the 1% level exists among the means of the Behavioral Rating.

No analysis of variance was made on the Fall River Special Class comparable to that for Malden in Table 30 because the distribution of after-data did not lend itself to these groupings. There would have been only 3 boys in group 1 and there were no girls at all in groups 1 and 2 as seen by Table 26.

Again, one wonders why there is a trend in the Special Class in Malden for the brighter the boy the more trouble he seems to get into, while in the Fall River Special Class the trend seems to be for the brighter the boy the better behaved he is. It would appear that the Fall River Special Class program may be more meaningful to its boys than is the program in Malden to its boys. Perhaps the program in Fall River is better geared to interest and keep busy the brighter youth. Or, perhaps, the whole frame of reference of the Malden Special Class teacher toward their students in regards to behavior is different from the approach of the Special Class teacher in Fall River. It was observed earlier that there may be an indication that the Malden Special Class teacher has, generally, a lower threshold to frustration than her counterpart in Fall River.

Relationship Between the Verbal and Non-verbal Forms of the KD Proneness Scale

The KD Proneness Scale and Check List (6) are verbal instruments devised by Kvaraceus earlier to locate the vulnerable or delinquency-prone child. The Scale is a pencil-and-paper instrument that the student marks. It consists of 75 multiple (4-choice) choice items dealing with "family relationships, home conditions, geography of residence, social and economic status, truancy record, school retardation, academic aptitude, school marks, liking for school, immaturity, club membership, companionship, family mobility, etc." Some neutral items dealing with color, food, and drink preferences were added to the Scale for rapport purposes.

The Check List is a series of 70 statements concerning a student which a teacher, social worker, or some other observer checks "Yes," "No," or "?." These statements are arranged in 3 general groups: I Personal factors, II School factors, III Family and Home factors. These two instruments have demonstrated their ability to differentiate the delinquent from the non-delinquent youth (1) (7) (11) (12) (15).

For 266 boys from the Malden graded population for whom scores on both the verbal and non-verbal forms of the KD Proneness Scale are available a product-moment correlation shows an r of .1697. For 267 girls from the Malden grades for whom a verbal and non-verbal score was available, the r was .1209. Eichorn (2), using the original form of the KD Proneness Scale (non-verbal) found a coefficient of correlation between the scores of 200 delinquent and 200 non-delinquent boys on the verbal and non-verbal forms to be .311. This is considerably higher than the values reported in this study. Both the verbal and non-verbal forms purport to measure delinquency proneness. Eichorn suggests that the two instruments may both be predicting delinquency proneness, but that each taps different factors of the complex that determines delinquent behavior. He suggests that they may supplement each other and that the verbal and non-verbal forms should be administered together.

There were 58 boys and 30 girls in the Malden Special Class for whom scores on the KD Check List were available. Table 31 shows the intercorrelation of this instrument with the other variables.

TABLE 31.--Intercorrelation between the Behavior Rating, Binet I.Q., KD Proneness Scale (non-verbal), after-data, and KD Check List for the Malden Special Class boys and girls

Variables	Binet I.Q.	KD Proneness Scale (non-verbal)	KD Check List	After-Data
		Boys		
Behavior Rating . . .	.0106	.0824	.4022**	.3489**
Binet I.Q. . .	. . .	.2861*	-.1217	-.4138**
KD Proneness Scale (non-verbal) . .	. . .	. . .	-.0632	-.0825
KD Check List .	. . .	. . .	. . .	.2895*
		Girls		
Behavior Rating . . .	-.2900	.3675*	.3202	.7875**
Binet I.Q. . .	. . .	.0322	.1587	-.1011
KD Proneness Scale (non-verbal) . .	. . .	. . .	.2038	.2968
KD Check List .	. . .	. . .	. . .	.3902*

*Significant at the 5% level of confidence.
**Significant at the 1% level of confidence.

This table is similar to Table 9 except that the number of subjects is slightly lower and the Check List has been added. It is noted that the Check List has a relatively high correlation with the Behavior Rating.

The r is significant at the 1% level for the boys but not significant at the 5% level for the girls. The relationship may be spuriously high in both instances. The teacher gave the Behavior Rating, and the same teacher checked the items on the Check List. It is reasonable to suspect a halo effect.

The Check List has practically no relationship with the KD Proneness Scale (non-verbal) for the Malden Special Class boys. The relationship is slightly higher, although not significant, for the Special Class girls. The Check List correlates with the after-data at the 5% level of confidence for both the boys and girls. Indeed, the correlation between the after-data and the Check List is considerably higher than is the correlation between the after-data and the KD Proneness Scale (non-verbal).

Reliability of the Scale

Eichorn (2) in the first edition of the non-verbal Scale reported a reliability of .60 based on an institutional sample tested three weeks after the first administration. The reliability of the revised non-verbal scale was estimated through a series of test-retest studies within a week of the first administration. Data were treated separately for boys and girls. Six classrooms in the Malden junior high schools were selected at random. A reliability of .827 was reported for the males (N 76) and .842 for females (N 80). A similar study was carried out with two separate groups of adjudicated delinquents in a New Hampshire training school for boys. Reliability coefficients yielded were .873 for one group of 38 delinquents and .776 for a second sample of 39 committed offenders. While the reliabilities appear fairly high for this type of measure, they nevertheless pose a serious problem when the measure is used to predict to complex behavioral adjustment variables. However the improvement in the reliabilities between the first and revised editions is marked.

CHAPTER IV

SUMMARY AND CONCLUSIONS

The purpose of this paper was to report on the validation study of the KD Proneness Scale (non-verbal). More specifically, the purpose was to investigate the predictive effectiveness of the instrument in relation to delinquency proneness, intelligence, and reading ability.

Summarizing the results, the revised non-verbal Scale failed to pass the rigorous tests of validation set up for each grade and for the various groups in the forecasting of norm-violating behavior. Hence it can not be accepted as a functionally useful instrument that can be incorporated easily or readily in a school-community delinquency prevention program. Nevertheless, some statistical evidence is available at certain grade levels and for certain groups indicating that the non-verbal Scale has some promise and potential to differentiate and identify some of the future norm violators at certain levels. The strength of the Scale at these grades and with these groups might be studied and exploited through further study and investigation. Of particular significance in the investigation is the verification that teachers' observations and knowledge of their students can be used with some effectiveness in identifying the future offender in school and community. It is true that nothing predicts behavior like behavior and that the teacher as a professionally trained observer can serve as a spotter of some of the future delinquents. The study also points to the heavy preponderance of norm violators to be found among the poorest readers in the junior and senior high school. Although it is not clear how much of the reading problem is cause and how much effect when viewed within the delinquency syndrome, school personnel can profitably concern themselves with those pupils who experience learning difficulties in the reading processes. Any help extended to the poor readers even at the sympton level may bring into focus the youngster who is already a norm violator or soon to take a step in this direction. A more detailed summary of the methodology, findings, limitations of the study, and needed research are presented in this chapter.

Methodology

The Item Analysis

Before the revised edition of the KD Proneness Scale (non-verbal) could be used keys had to be developed for both boys and girls. The Scale was administered to 289 delinquent and non-delinquent boys and to 277 delinquent and non-delinquent girls equated for age. A chi-square analysis of the difference of responses made to each item by the delinquent and non-delinquent subjects was made. Those items which differentiated the delinquents from the non-delinquents at least at the 5% level of confidence were selected for keying. A plus (+) and minus (-) key for each sex was developed by determining which of the significant items had been selected primarily by the delinquents or primarily by the non-delinquents.

The Validation Study

A total of 1594 students from the graded Junior High Schools in Malden, Massachusetts, plus the Special Class students in the Malden and Fall River systems were the subjects for the study.

A Behavior Rating was secured from teachers, guidance counselors, and/or principals for each student. Scores on the KD Proneness Scale, I.Q., Vocabulary, Paragraph Reading, and Total Reading completed the before-data.

The behavior of the subjects was followed for a period of three years. Every incident of misconduct was recorded. These infractions were designated the after-data, and included: Truant, Disobedience Major and Minor, Detention, Cheating, Stealing, Damage to Property, Hurt Others, Sex Problem, Social Agency Contact, Police Contact, Court Contact, or "Other."

At the end of the three-year period of the study the incidents of misconduct were tallied and the data analyzed. Descriptive statistics were obtained for the various grades by sex. Intercorrelations between the various variables were made to determine the relationship, if any, between relevant factors. The data were subjected to analyses of variance by Reading Ability, after-data, and I.Q. and the predictive effectiveness of the instrument determined relative to these three areas.

Results

The Descriptive Statistics

1. The I.Q.'s were normally distributed and fell within the SE_m of the instrument used.

2. The boys score higher on the KD Proneness Scale (non-verbal) than do the girls. The Scale is admittedly developed with a masculine orientation.

3. The Special Class boys and girls score significantly higher on the KD Proneness Scale than do the graded students.

4. There is a slight tendency for the frequency of the after-data to decrease for the boys as they progress from grade 7 to grade 9. The one exception to this trend was a high frequency of Major Disobediences for the 8th grade boys. This fact may reveal the efficaciousness of the educational program. As the more vulnerable youngster approaches the age at which he can drop out of school, the more restless he becomes and the less effective is the school program for him.

5. The Fall River Special Class boys had a much lower frequency of after-data incidents than the Malden Special Class boys. Speculation is made concerning a difference in method of placement and handling Special Class students in the two school systems. Speculation is also made as to the threshold of frustration of the Malden Special Class teacher as compared to her Fall River counterpart.

Intercorrelations Between the Variables

1. A significantly high correlation was found between I.Q. and the verbal skills. Such a relationship would be expected.

2. A very high relationship was found between Vocabulary, Paragraph Reading, and Total Reading. These correlations between Vocabulary and Total Reading and between Paragraph Reading and Total Reading are spuriously high. Vocabulary and Paragraph Reading are component parts of Total Reading.

3. The correlation between the teachers' Behavior Ratings and the after-data was the highest correlation with the after-data. This

relationship may be spuriously high. Much of after-data consists of school infractions. The teachers who give the Behavior Rating also give the detentions, disobediences, etc. for at least one year. There may well be a built-in halo effect operating.

4. The correlation between the Behavior Rating and the after-data was higher than the correlation between the KD Proneness Scale (non-verbal) and the after-data. Teachers appear to do better at predicting future outcomes of behavior than does the instrument. But, as noted above, the teachers can be a responsible factor in determining the future behavior.

5. The correlation between the KD Proneness Scale and the after-data was low and there was no consistency with regard to grade or sex. It would be concluded that the instrument has little predictive efficiency.

6. In the Malden Special Class the teachers' Behavior Rating and the after-data correlate at .349 for the boys and at a very significant .796 for the girls. The Malden Special Class teacher, it is concluded, is much better at predicting the behavior of her girls than she is of her boys.

7. In the Malden Special Class the KD Proneness Scale (non-verbal) has a closer relationship with the after-data of the boys than of the girls, but the relationship is low.

8. The Binet I.Q. and the after-data correlate in a slightly negative direction for the girls but at a relatively significant -.41 for the boys. It is concluded from this negative correlation that the brighter the boy in the Malden Special Class the more trouble he gets into.

9. No trends between the variables are found for the Fall River Special Class. The relationship between the KD Proneness Scale (non-verbal) and the after-data is closer for the boys than for the girls, but it is too low for both to be of significance in prediction. The relationship between the instrument and the Binet I.Q. is negligible.

10. The Fall River Special Class teacher does not appear to be able to predict the future behavior of her students as well as her Malden counterpart. In the Fall River Special Class the correlation between the Behavior Rating and the after-data is about zero for the girls and .22 for the boys. Contrary to the Malden Special Class teacher, the Fall River Special Class teacher is slightly better at predicting the behavior of her boys than she is of her girls.

Analysis of Variance by Total Reading

1. For the graded boys the Behavior Rating varies with Total Reading only for the 7th grade at a significant 1% level. The KD Proneness Scale (non-verbal) varies with Total Reading only in grade 8 and it is significant at the 1% level. The after-data varies with Total Reading in grades 7 and 9 but is significant only for grade 7. The poorest readers in the 4th quartile of every grade have the worst Behavior Rating, except grade 9, the highest KD Proneness Scale (non-verbal) score, and the highest score on the after-data.

2. For the graded girls, the Behavior Rating varies with Total Reading for each grade, but the F-ratios are not significantly high. Teachers' Behavior Ratings appear to correspond closer to the verbal skills for the girls than for the boys. The KD Proneness Scale (non-

verbal) varies with Total Reading only in the 9th grade, and the F-ratio is significantly high. As was true with the boys, the after-data varies with Total Reading in grades 7 and 9, but the F-ratio is significant at the 1% level only for grade 7. In every grade the poorest readers of the 4th quartile have the worst Behavior Rating, the highest score on the KD Proneness Scale (non-verbal) and the worst record on the after-data.

3. There is a trend, only, for the better reader to have a better Behavior Rating, to score lower on the KD Proneness Scale (non-verbal), and to have a lower after-data score. The poorer readers tend to have the poorer Behavior Rating, the higher the KD Proneness (non-verbal) score and higher scores on the after-data with both boys and girls.

Analysis of Variance by I.Q.

1. For the boys in all grades, the several verbal skills vary according to I.Q. and the F-ratios are significantly high above the 1% level of confidence.

2. All the other variables, Behavior Rating, KD Proneness Scale (non-verbal), and after-data vary with I.Q. at a significant 1% level for the 7th grade.

3. The Behavior Rating varies with intelligence for grade 8 and 9 boys but the mean differences are significant only for the 8th grade. The differences among the means decrease from grade 7 to 9. It is concluded that the groups become more homogeneous on this variable as the grade level increases.

4. The KD Proneness Scale does not vary consistently with I.Q.

except in grade 7 boys.

5. For the graded girls the Behavior Rating varies with I.Q. in all grades but not always at a significant level.

6. The girls' verbal skills vary significantly according to I.Q. in all grades.

7. While the KD Proneness Scale varies with I.Q. for the 7th and 9th grade girls, the mean differences are not significant at any grade.

8. There is a trend among both boys and girls for the duller students to have the poorer Behavior Ratings.

9. There is a weak trend for the duller boys and girls to score higher on the KD Proneness Scale (non-verbal).

10. There is a weak trend for the duller boys and girls to get into more trouble as reflected by higher after-data scores.

11. The after-data of the brightest group of the Fall River Special Class boys is greater than all but the very dullest group.

12. The after-data of the Malden Special Class boys is the reverse from the graded students. The dullest boys have the lowest scores on after-data while the brightest boys have the highest scores.

13. For the boys in both the Malden and Fall River Special Class, the brighter boy tends to get into more trouble. He may be the marginal boy for whom a graded situation might prove more profitable than the Special Class. He might be a troublesome boy who is placed in the Special Class because he is a behavior problem.

14. The dullest Malden Special Class girl has the best Behavior Rating and the brightest Special Class girl has the worst Behavior Rating.

Analysis of Variance by After-Data

1. When the graded subjects are arranged by after-data groupings, the rank-order continuity of means is broken for every variable for both boys and girls in the Legal offense group. It appears that the Legal offender falls nearer the middle of the distribution on the variables, Behavior Rating, I.Q., Paragraph Meaning and Total Reading. The boys in the Legal offense group have vocabularies better than all but the boys in the No offense group. Their KD Proneness Scale (non-verbal) scores are lower than all but the No offenders.

2. It is concluded that the graded Legal offender is a unique person not identifiable on a behavior continuum with any of the instruments used in this study.

3. The Malden and Fall River Special Class boys who become Legal offenders fall in the middle of the distribution when arranged by after-data. In Malden the Legal group is brightest; in Fall River it is brighter than all but the No offenders. Their KD Proneness Scale (non-verbal) score is lower than all but the No offenders. In the Malden Special Class the dullest boys are the best behaved and yet they have the highest scores on the KD Proneness Scale (non-verbal). The girls in the Malden Special Class with the lowest I.Q. are the best behaved.

4. It is concluded that there is a general trend in the graded population that supports the hypothesis that the brighter students are better behaved, have a better Behavior Rating and score lower on the KD Proneness Scale (non-verbal). This trend is not specific enough to be used for any predictive purposes.

5. It is concluded that, among the Malden Special Class students,

there is a trend for the duller the student the better he behaves and the higher he scores on the KD Proneness Scale (non-verbal). The brighter the Malden Special Class student, the poorer is his behavior. However, this trend cannot be generalized for predictive purposes.

6. In the Fall River Special Class, the brighter the boy, the trend is for him to behave better. The duller he is the more the tendency is for him to get into trouble.

7. It is concluded that the behavior of the Special Class student in general is a function of his environment.

Correlation With the KD Proneness Scale (verbal) and the Check List

The KD Proneness Scale (non-verbal) correlates at a low . 17 for graded boys and at a lower .12 for graded girls with the verbal Scale and -.06 and .20 with the check list. It is concluded that, if the two instruments are measuring delinquency proneness, they are measuring different aspects of it, and they may be used together to supplement each other.

Reliability of the Scale

Reliability measures were obtained on four separate groups including random samples in the public schools and two institutional groups of adjudicated delinquents. The reliability coefficients ranged from .873 to .776.

Limitations of the Study

1. It is felt that poor readers and/or dull students may experience difficulty in marking responses on the separate answer sheets. The question arises, then, as to the accuracy of their responses. It is felt that a more precise testing procedure for such students would be for them to mark their choices directly on the test booklet.

2. A major weakness in the study may have been the use of adjudicated institutionalized delinquents versus a graded sample for the item analysis and keying purposes. Although the obvious misbehaviors had been screened from the graded sample it is not known how many unrecognizable delinquents remained in the sample.

Of greater significance to the study is the fact that adjudicated institutionalized delinquents are, indeed, quite different from the delinquent loose in society who has not been caught or adjudicated or institutionalized. Yet the institutionalized delinquents were the ones used to develop the scoring keys.

3. The frequency with which report slips were returned from the Fall River Special Class teachers gave rise to some speculation as to whether or not all misbehavior was being reported. Although caution was exercised regarding this fact by periodic checks with the responsible personnel, it is a question whether the frequency reported is normal or whether the teachers refrained from reporting incidents.

Suggestions for Further Research

1. The use of institutionalized delinquents in the standardization and development of the scoring keys has already been questioned. Concurrent or "status" differences were used for a "predictive" study. It would seem appropriate to restandardize the instrument on the basis of the responses of the subjects in the various after-data groups of the current study. Then a new group of similar subjects could be followed for an additional period for predictive purposes.

2. An investigation into the nature and composition of the Legal offense group would be a worthwhile project. If misconduct exists on a behavior continuum from No offense to Legal offense, the Legal group is

unique. Figure 1 shows the relationship of the four after-data groups on the behavior continuum in relation to the KD Proneness Scale (non-verbal), the Behavior Rating, and Intelligence for the graded boys.

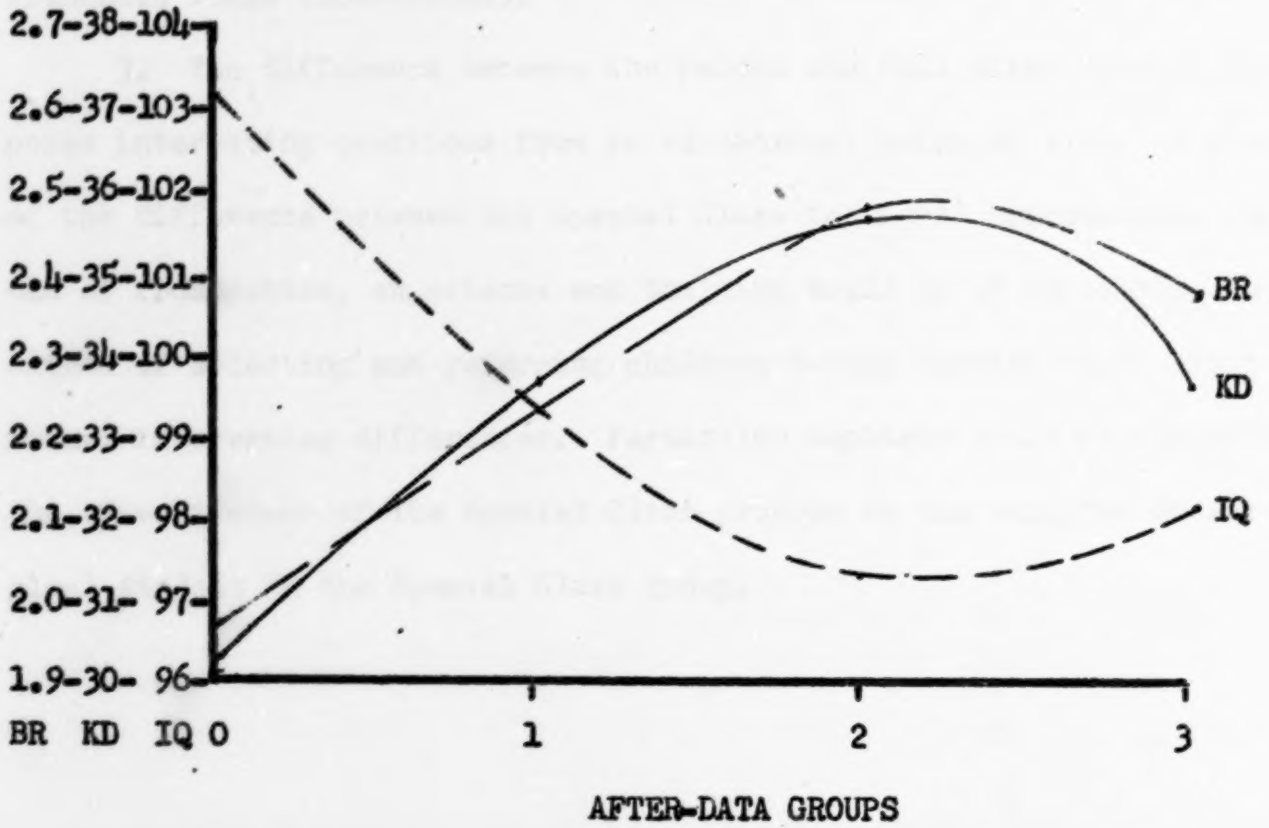


Fig. 1.—A graphic representation of the relationship of the Behavior Rating, KD Proneness Scale (non-verbal), and Intelligence with the After-data groups for the graded boys.

The teachers' Behavior Rating appears to bear a linear relationship to the after-data through Group 2. Then it drops off for the Legal offenders in Group 3. The KD Proneness Scale (non-verbal) bears a definite curvilinear relationship to the after-data groups with the Legal offenders in Group 3 falling lower than Group 1. The I.Q. curve contradicts the hypothesis that there is a linear relationship between degrees of misbehavior and intelligence. The Legal offenders are brighter than those in Group 2.

An investigation into the factors that cause a drop in both the teachers' Behavior Rating and the KD Proneness Scale (non-verbal) would be a most worthwhile study. An explanation of the curvilinearity of the relationships involved between the variables and the severity of misbehavior would do much to effect the predictive efficiency of the KD Proneness Scale (non-verbal).

3. The difference between the Malden and Fall River Special Classes poses interesting questions from an educational point of view. A study of the difference between the Special Class teachers' orientation, threshold of frustration, experience and training would be of interest. The method of selecting and referring children to the Special Class might reveal interesting differences. Particular emphasis could be placed on the effectiveness of the Special Class program on the brighter or marginal student in the Special Class group.

REFERENCES

1. Donahue, Mary C., "Further Validation of the *K.D. Proneness Scale*," Unpublished Master's Thesis, Boston University, 1949.

2. Eichorn, John R., "The Construction and Evaluation of a Non-Verbal Delinquency Proneness Scale," Unpublished Doctorate Dissertation, Boston University, 1952.

3. Glueck, Sheldon and Glueck, Eleanor, *Unraveling Juvenile Delinquency*. New York: Commonwealth Fund, 1950.

4. Hathaway, Starke R., and McKinley, C. Charnley, *The Minnesota Multiphasic Personality Inventory*. New York: Psychological Corporation, 1943.

5. Hathaway, Starke R., and Monachesi, Elio D., *Analyzing and Predicting Juvenile Delinquency with the MMPI*. Minneapolis: University of Minnesota Press, 1953.

6. Kvaraceus, William C., *K.D. Proneness Scale and Check List*. Yonkers-on-Hudson: World Book Company, 1950.

7. Kvaraceus, William C., "A Partial Validation of the *KD Proneness Check List* via Case Records of Institutionalized Delinquents," *The Forum of Education*, (July, 1955) 14:28-30.

8. Kvaraceus, William C., "Forecasting Juvenile Delinquency," *Journal of Education* (April, 1956) 138:1-43.

9. Kvaraceus, William C., "Prediction of Maladjustive Behavior," In the *Proceedings of the 1958 Invitational Conference on Testing Problems*, Princeton: Educational Testing Service, 1959:26-34.

10. Loofbourow, Graham C., and Keys, Noel, *The Personal Index*, Minneapolis: Educational Test Bureau, 1933.

11. McDonnell, Sister Isabelle, "A Study of the Validity of the *KD Proneness Scale*," Unpublished Master's Thesis, Catholic University, 1954.

12. Piane, John M., "The Validation of the *Kvaraceus Delinquency Proneness Scale* and *Check List*," Unpublished Senior Thesis, Department of Psychology, Dartmouth College, 1950.

13. Porteus, Stanley D., *Qualitative Performance in the Maze Test*. New York: Psychological Corporation, 1942.

14. Stodgill, Ralph M., *Behavior Cards: A Test-Interview for Delinquent Children*. New York: Psychological Corporation, 1949.

15. Walton, Arline J., "A Further Study of the *KD Proneness Scale*," Unpublished Master's Theses, Boston University, 1953.

16. Washburne, J.W., "An Experiment on Character Measurement," *Journal of Juvenile Delinquency* (January, 1929) 13:1-8.

APPENDIX

K D PRONENESS SCALE

non-verbal form
(revised)

By William C. Kvaraceus, Professor of Education, Boston University
John R. Eichorn, Associate Professor of Special Education, Indiana University

---

DIRECTIONS:

You have been given a booklet and an answer sheet. The booklet contains a number of circles, each of which has four pictures, like the samples on the front page. This is not a test. We only want to know which picture in each circle you like the most and which picture you like the least. You are to place your answers on the answer sheet. You are not to make any mark on the booklet.

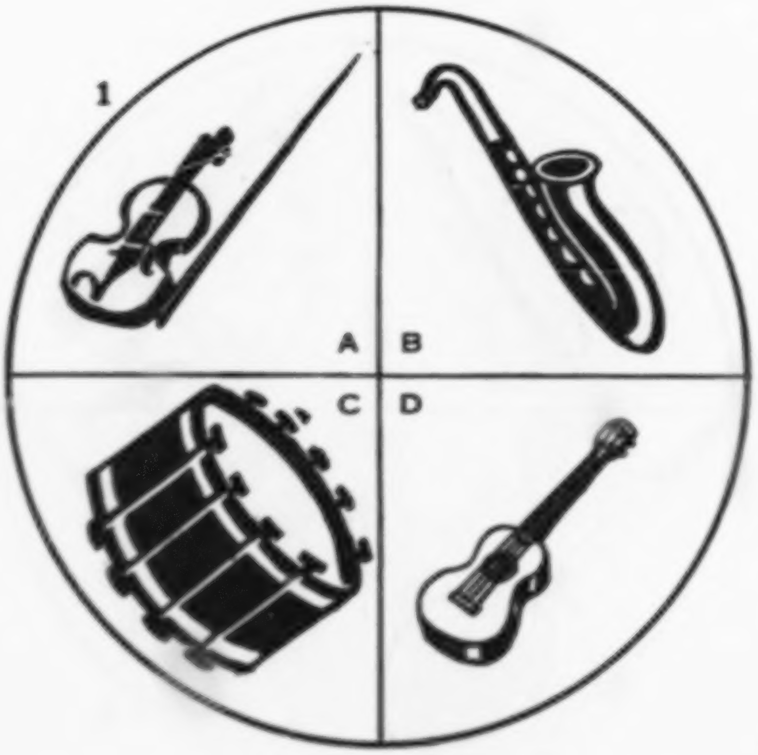
Look at the first sample. Let us suppose you like the saxophone the most. Notice this picture is marked with the letter B. Now look at the answer sheet. Find number 1 at the top of the page. Find the letter M (which means most). Beside the letter M are four pairs of dotted lines. Notice over each pair of dotted lines is a letter. Each letter stands for a picture in the circle. Make a heavy black mark between the dotted lines under the letter B. This would show that you like the saxophone the most.

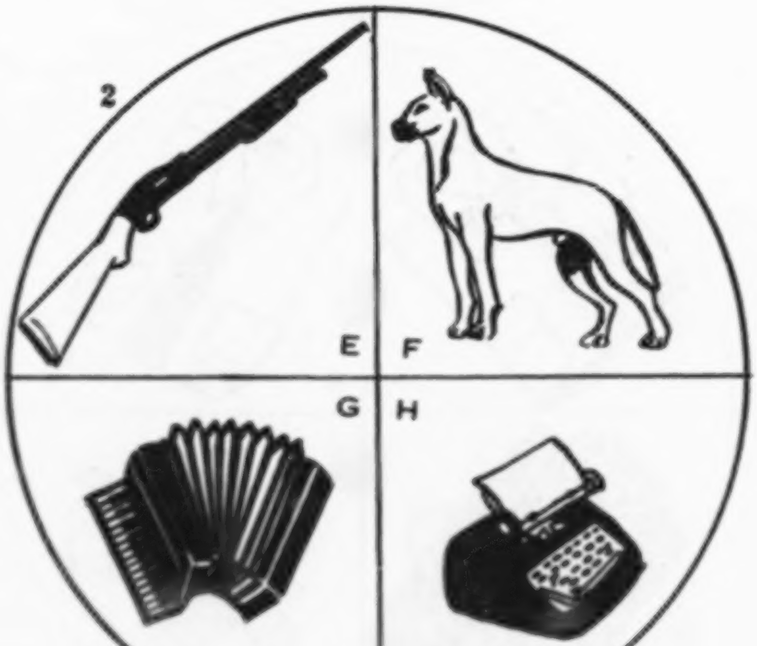
Now look at the first circle again. Let us suppose you like the drum the least. Notice this picture is marked with the letter C. To show that you like the drum the least again find number 1 on the answer sheet. Below the letter M is the letter L (which means least). Beside the L are four pairs of dotted lines. This is the row you use to show which picture you like the least. Make a heavy black mark between the dotted lines under the letter C. This would show that you like the drum the least.

Are there any questions as to how you are to mark the answer sheet?

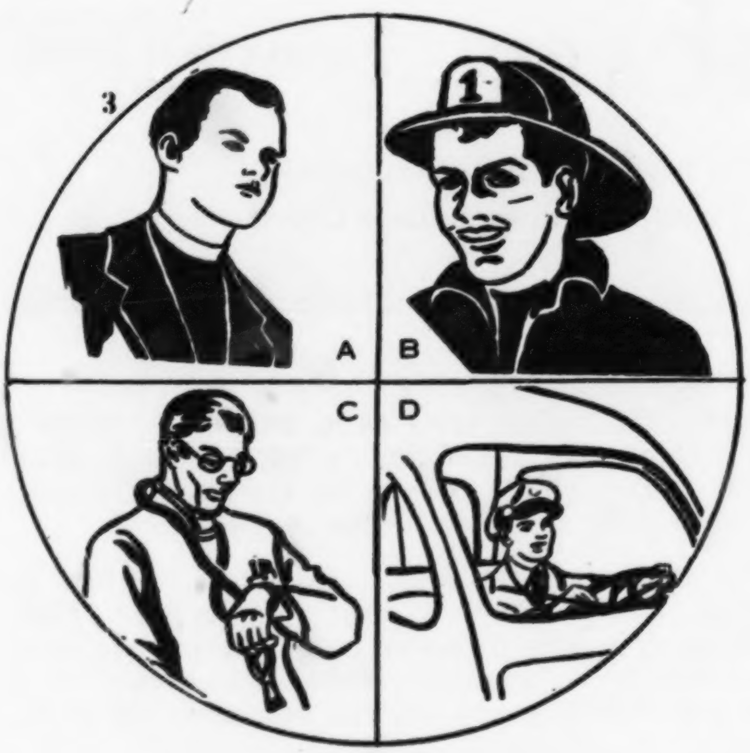
Remember, there are no right or wrong answers. Everyone does not like the saxophone the most. Neither does everyone like the drum the least. Now look at the second sample. Decide which picture in this circle you like the most and mark your answer in the M row beside the number 2 as you did for the first circle. Now decide which one you like the least and mark your answer in the L row.

Now that everyone understands what to do, open your booklets and do the same for each of the circles. Remember you are to tell which picture in each circle you like the most and which picture in each circle you like the least. You will have one mark in every M (most) row and one mark in every L (least) row. Be sure to match the number of the circle with the number on the answer sheet.

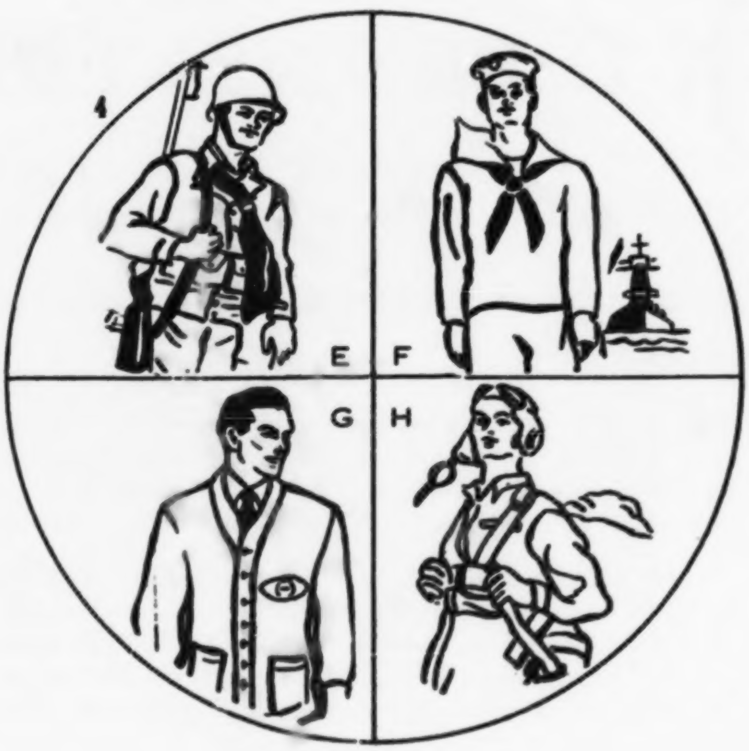




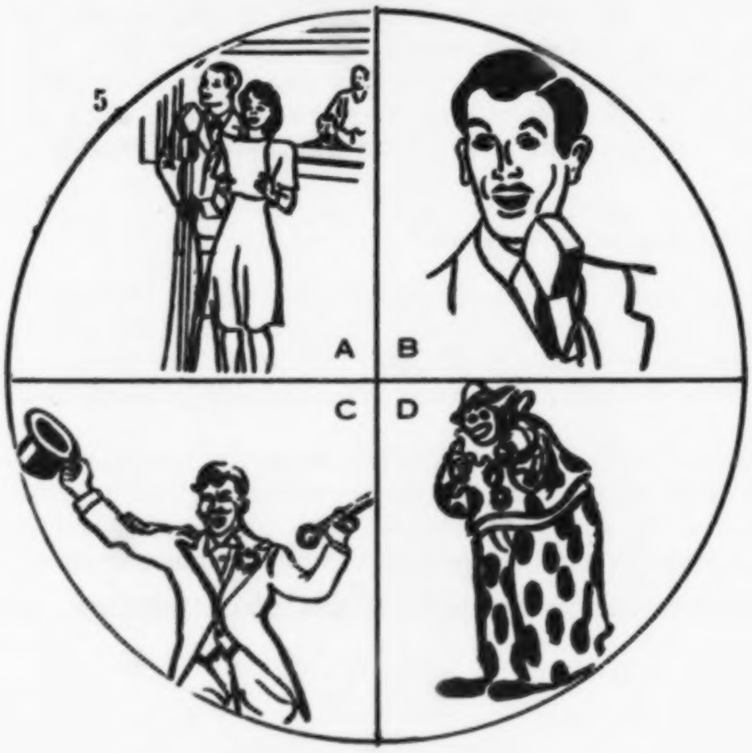
3



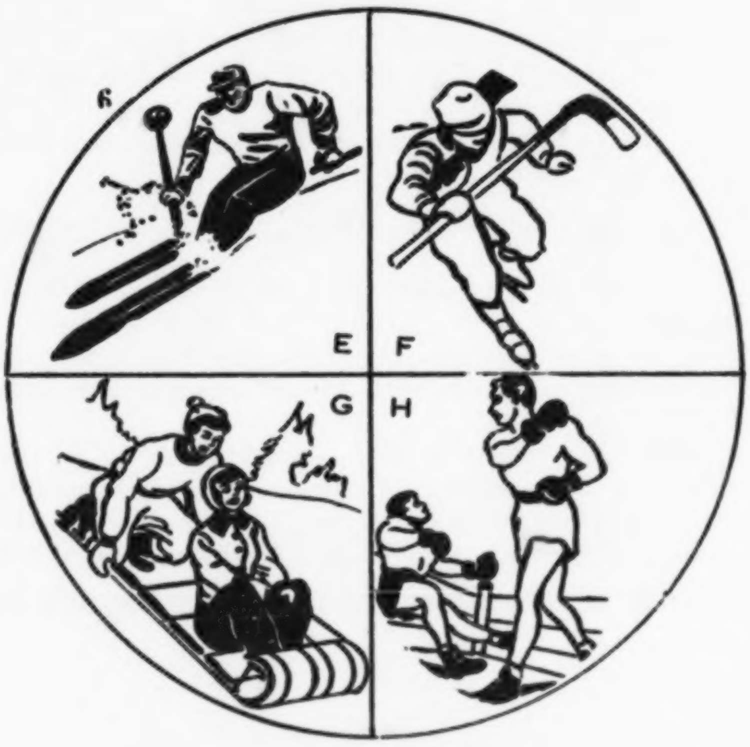
4



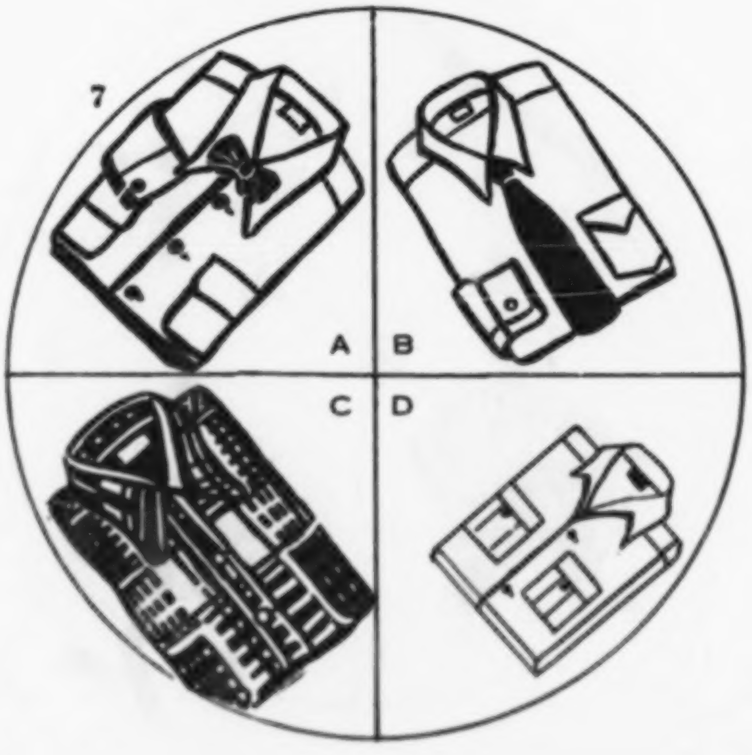
5



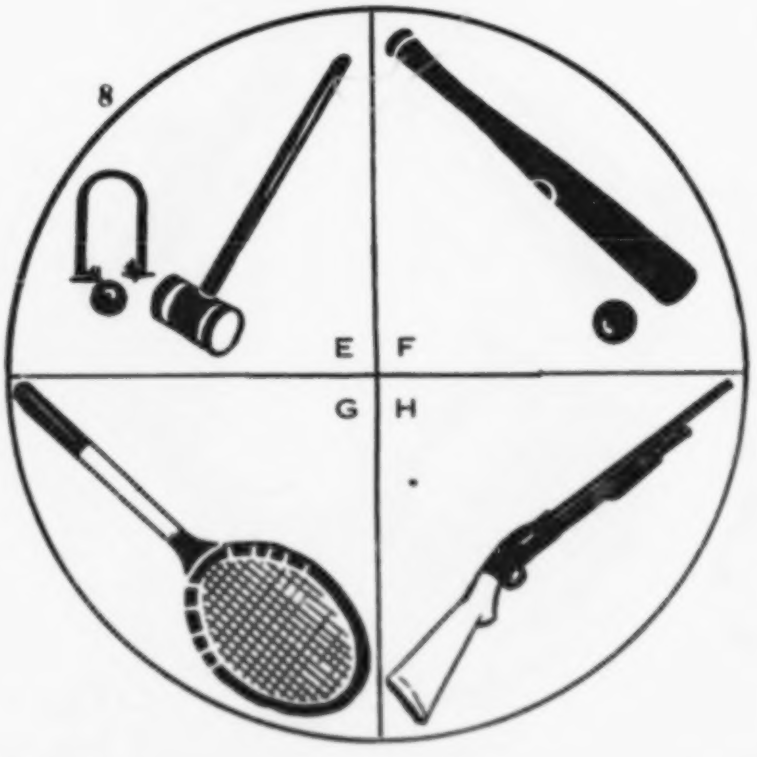
6



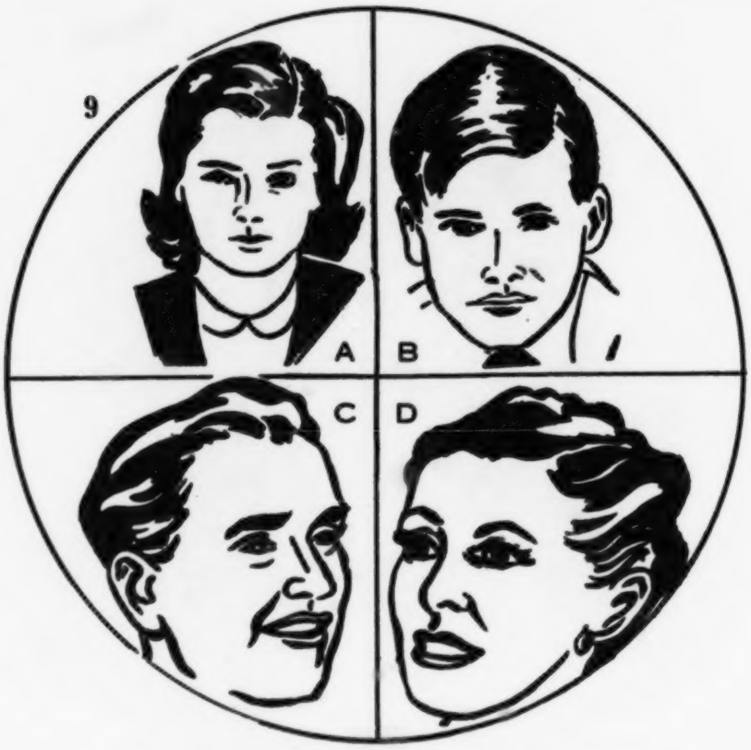
7



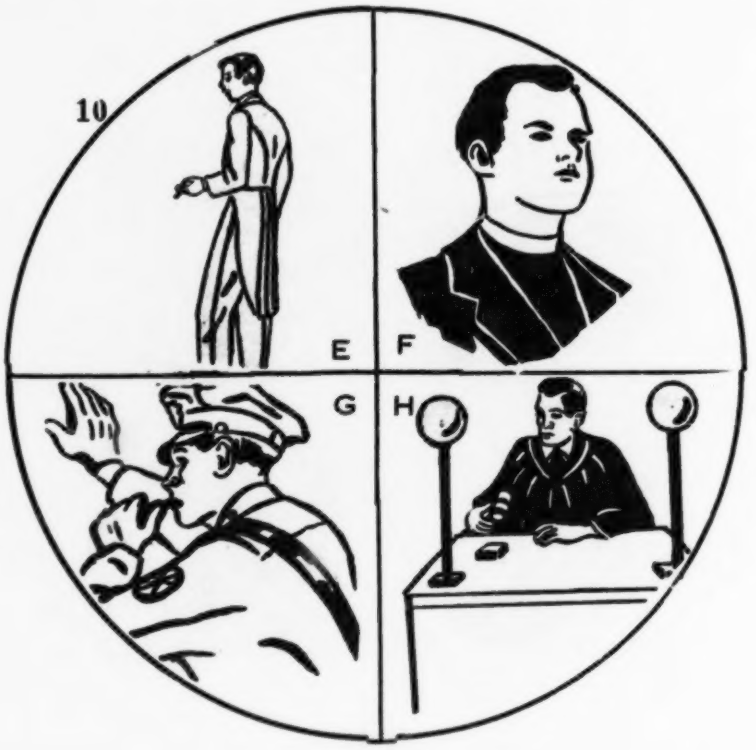
8



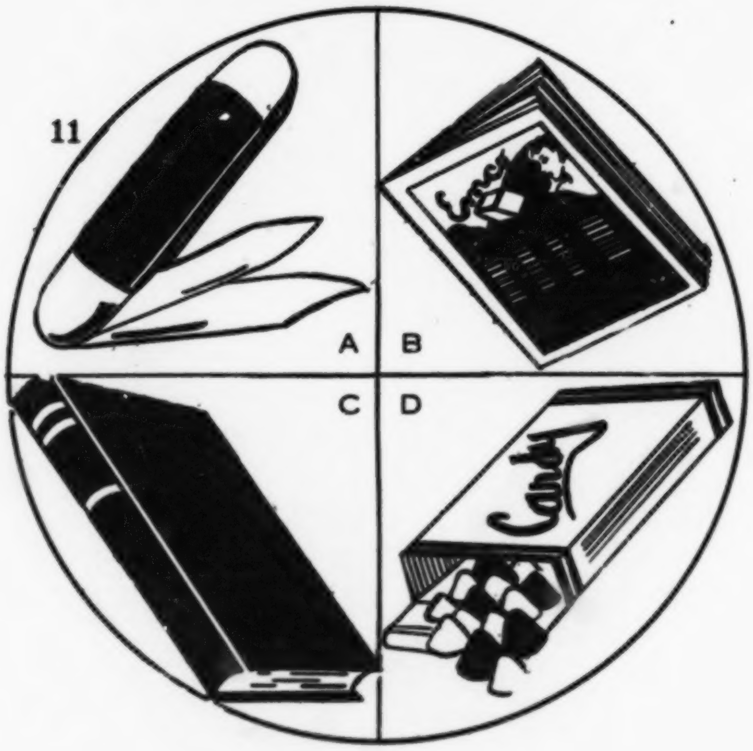
9



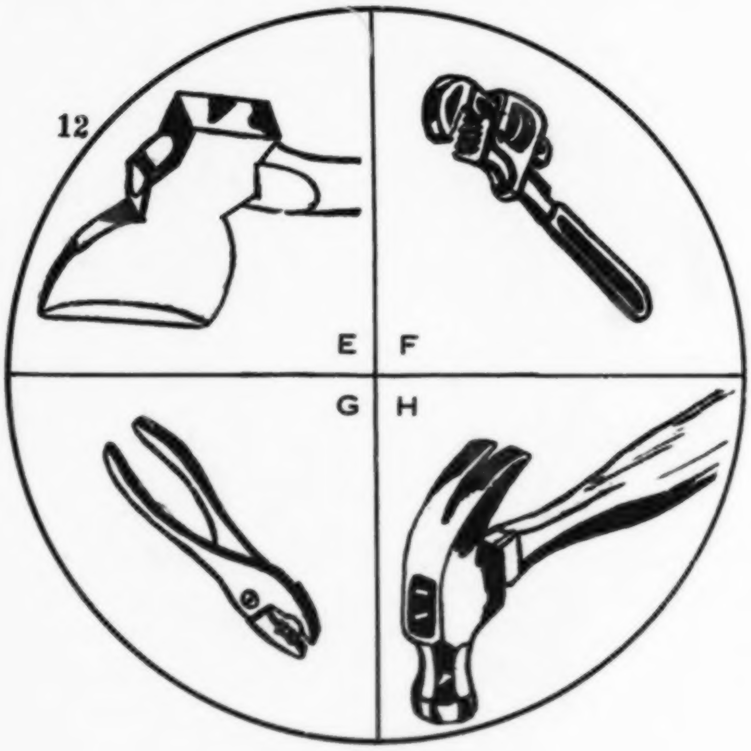
10



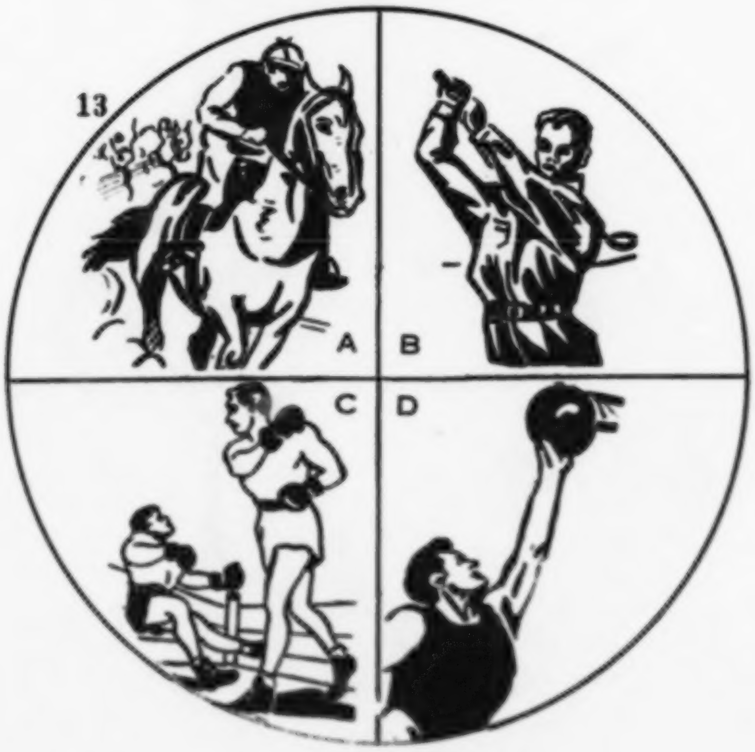
11



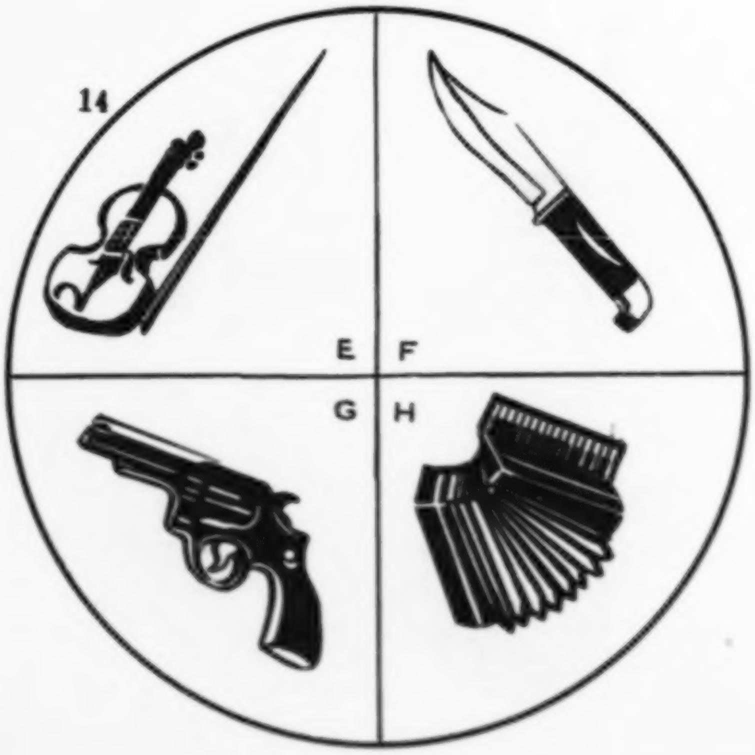
12



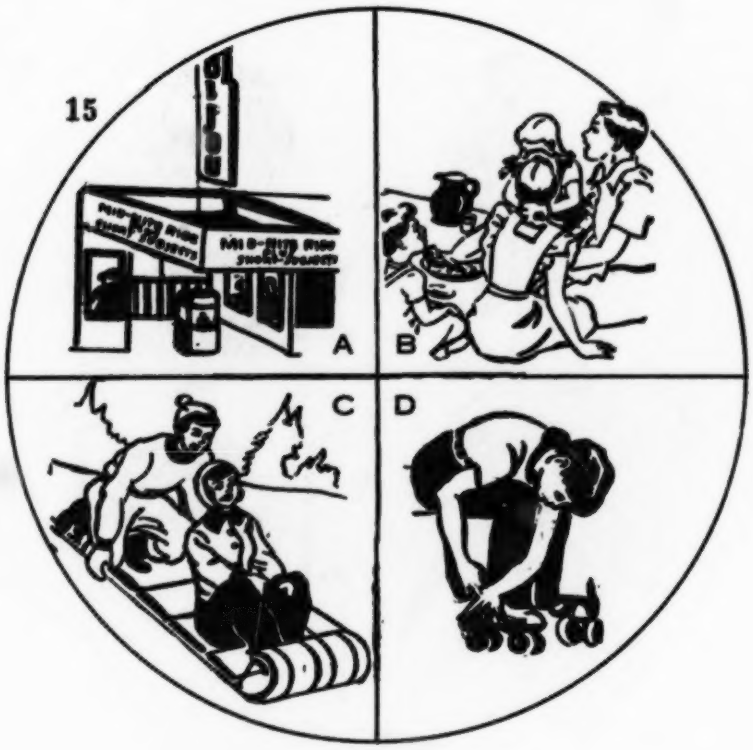
13



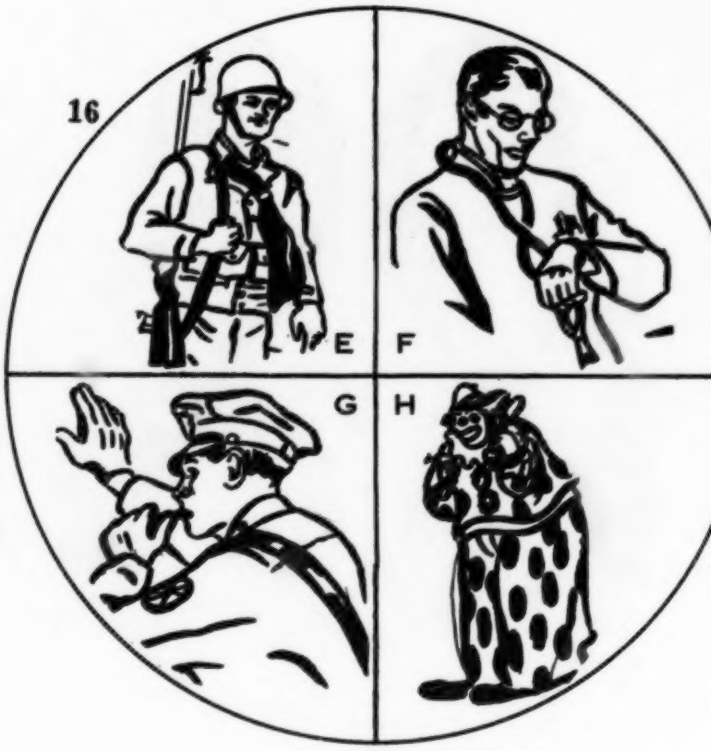
14



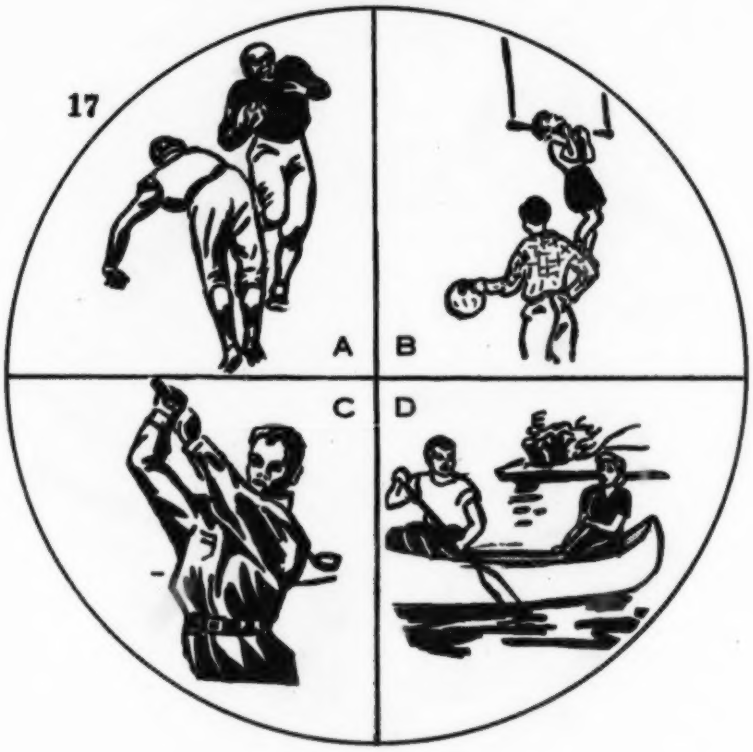
15



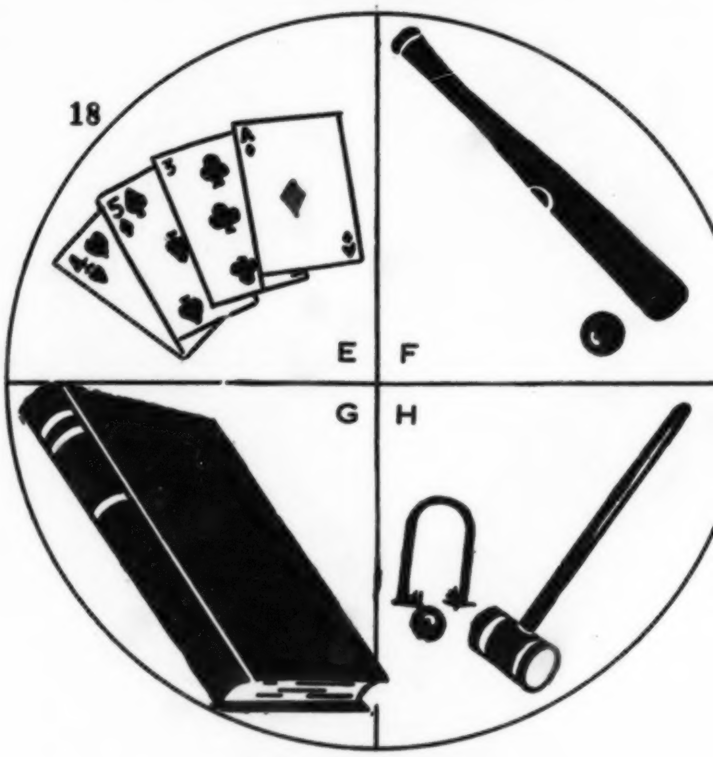
16



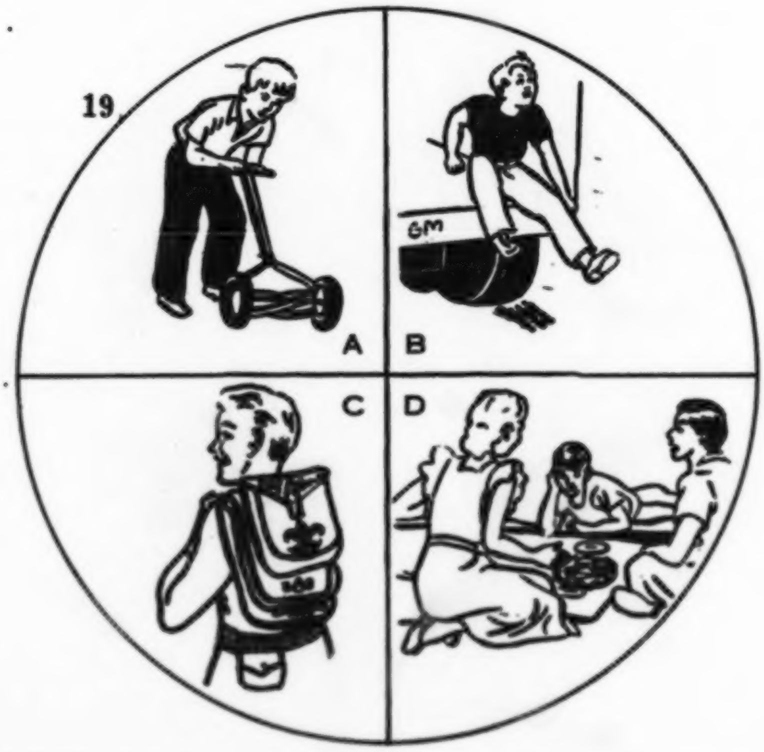
17



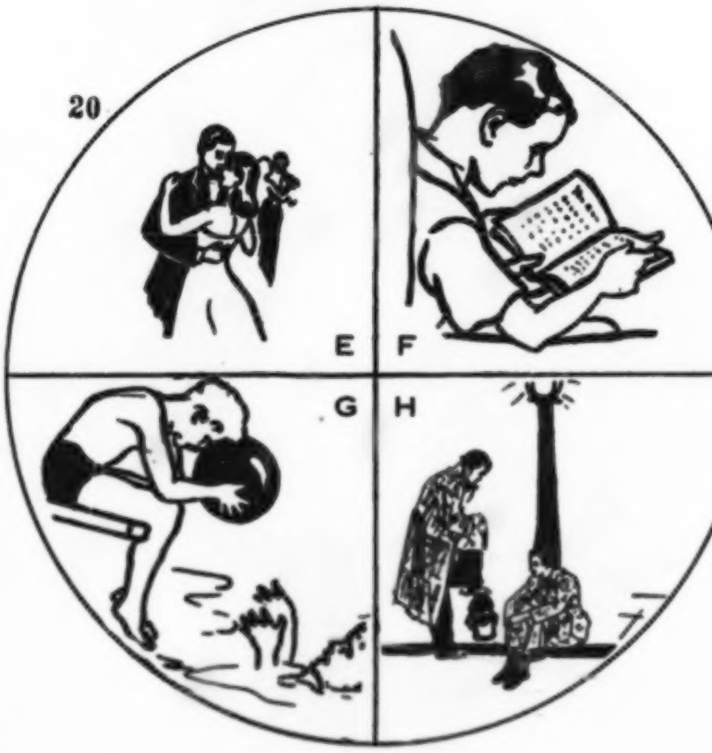
18



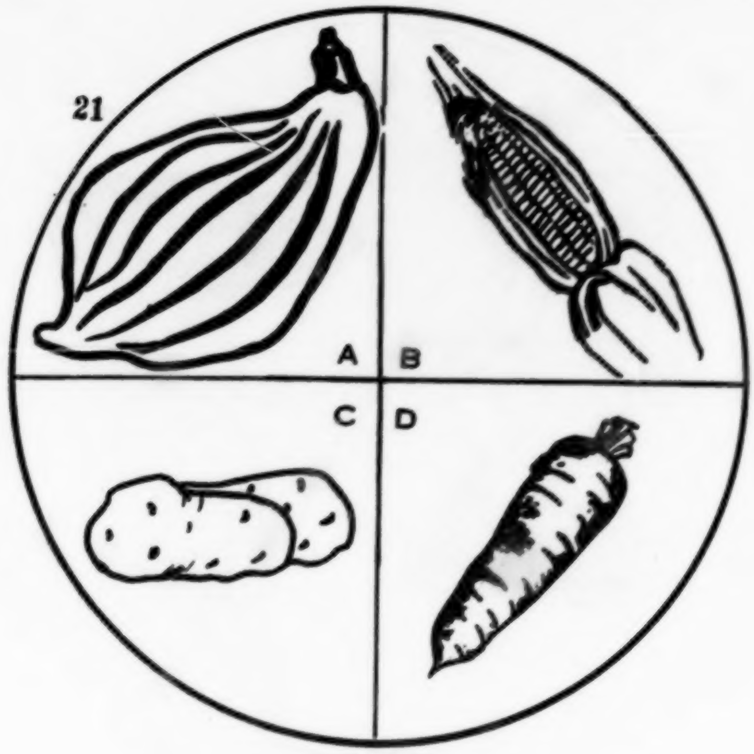
19



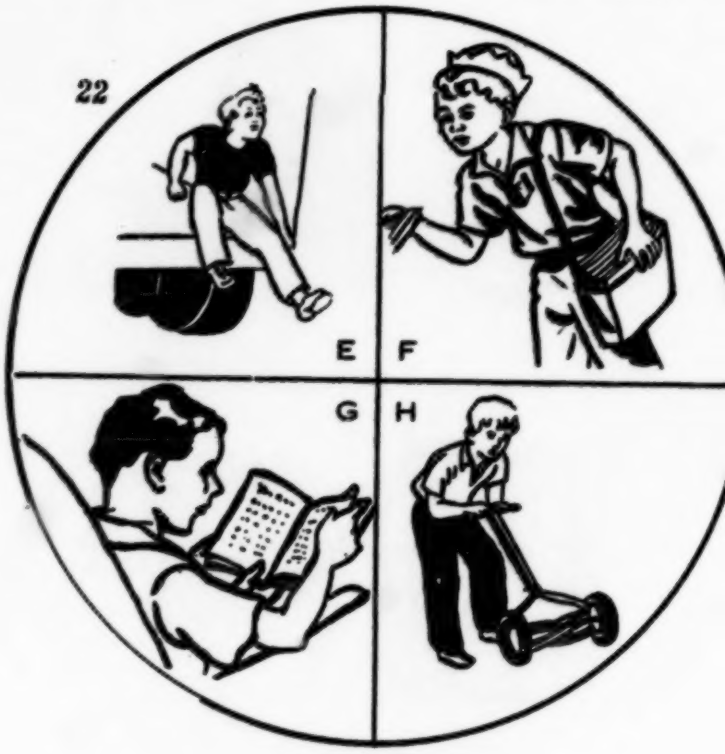
20



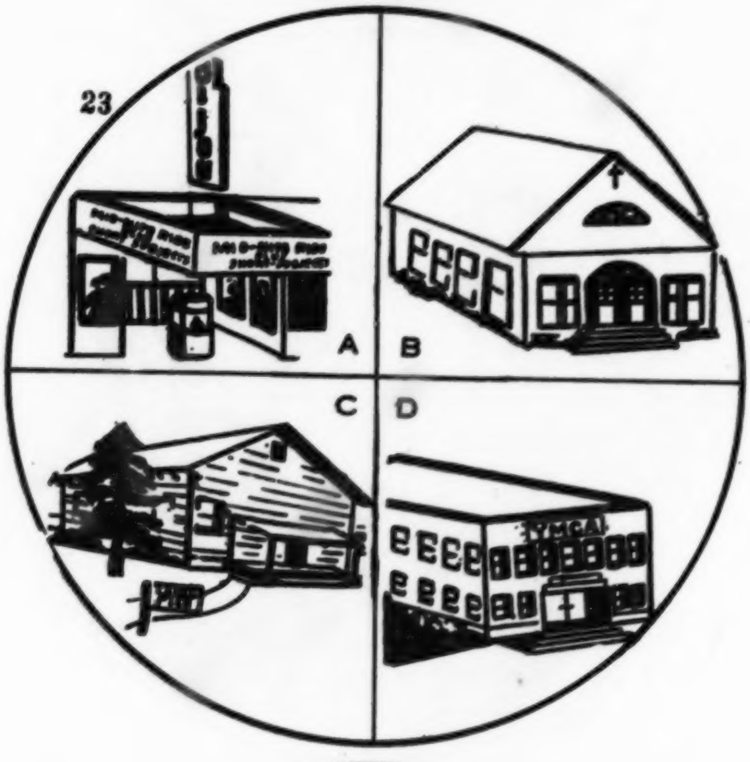
21



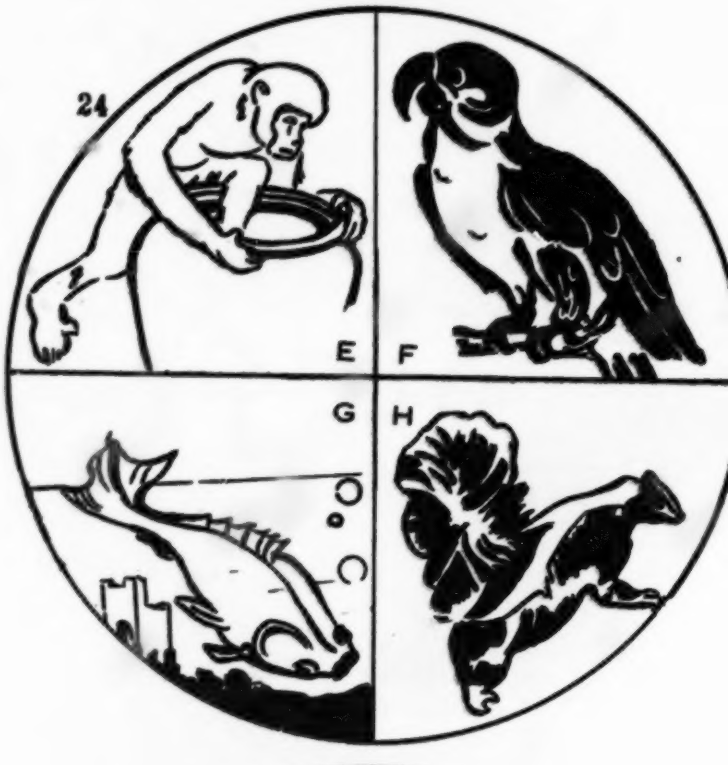
22



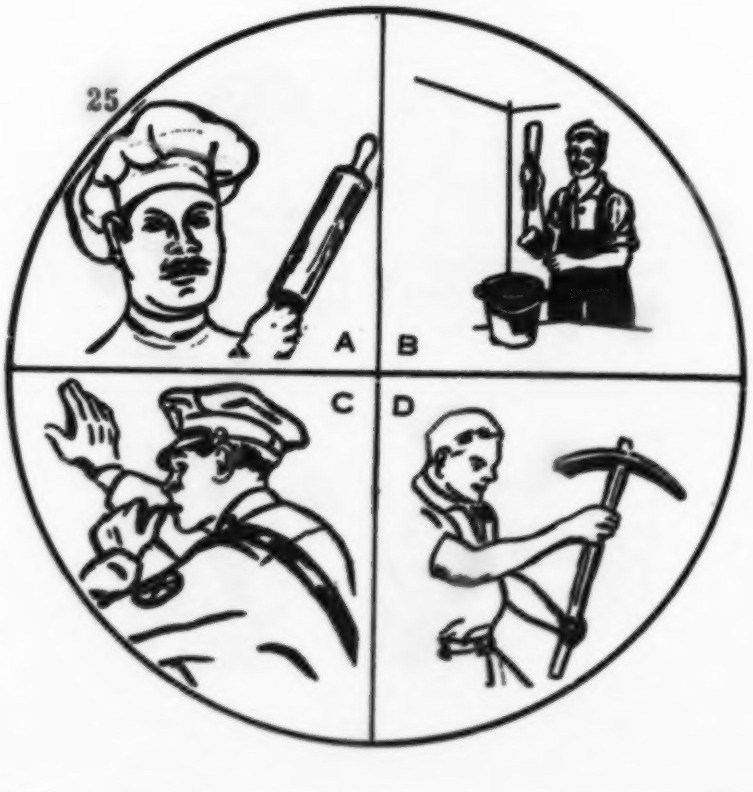
23



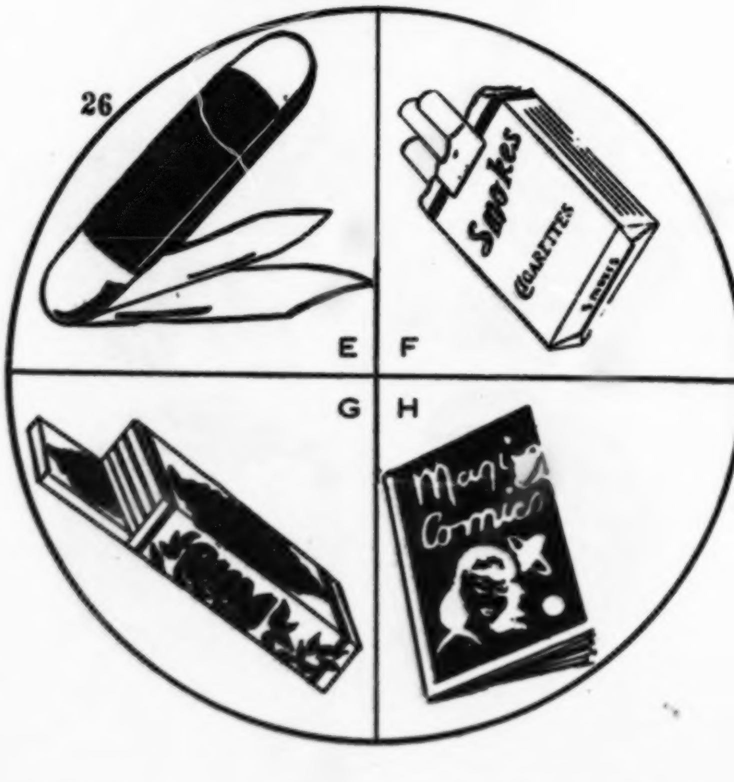
24



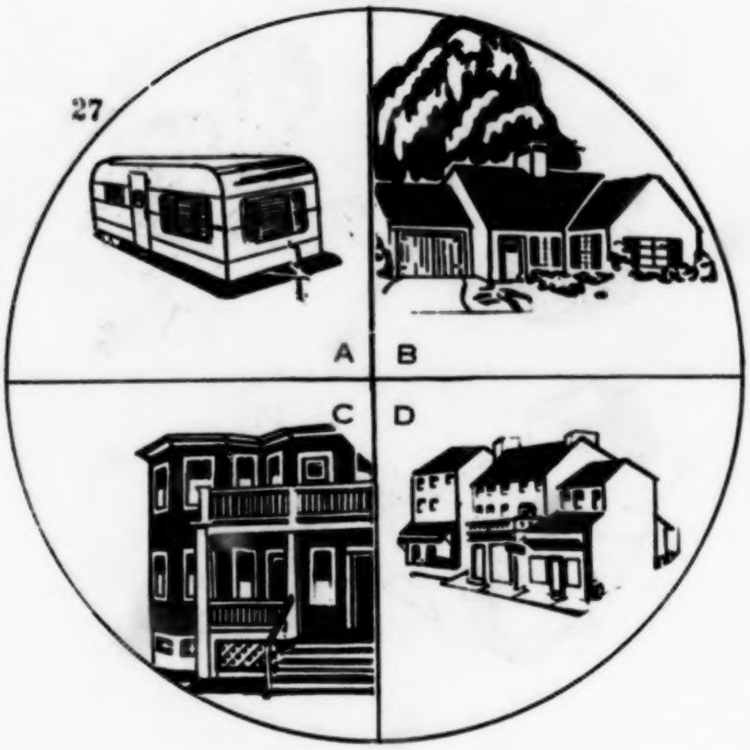
25



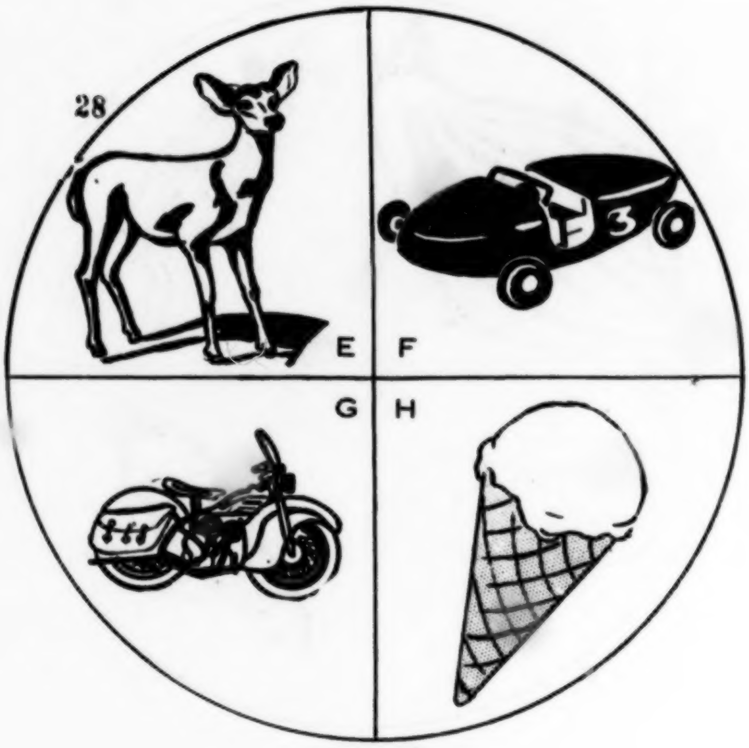
26


E
F
G
H
Smokes
CIGARETTES
Magi
Comics

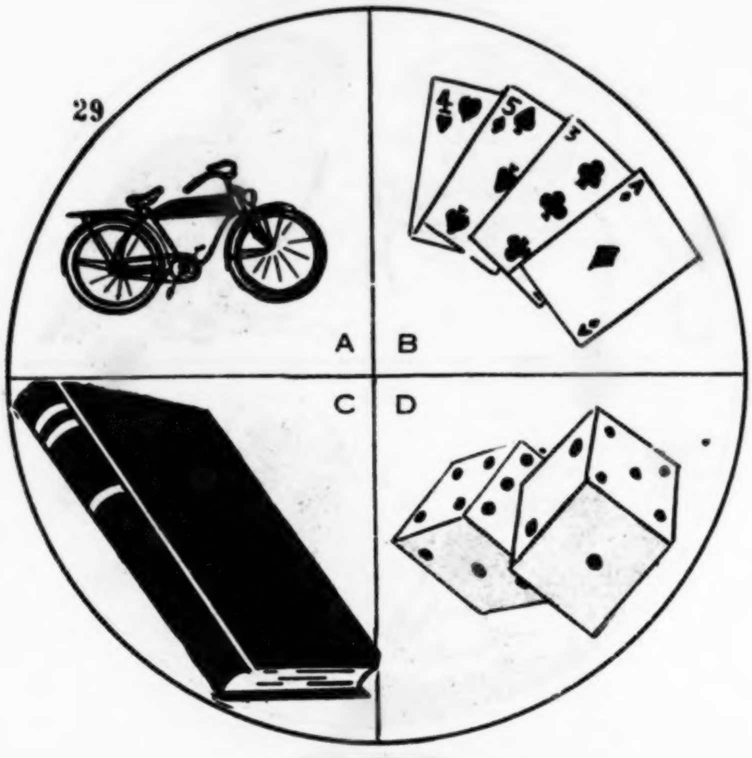
27



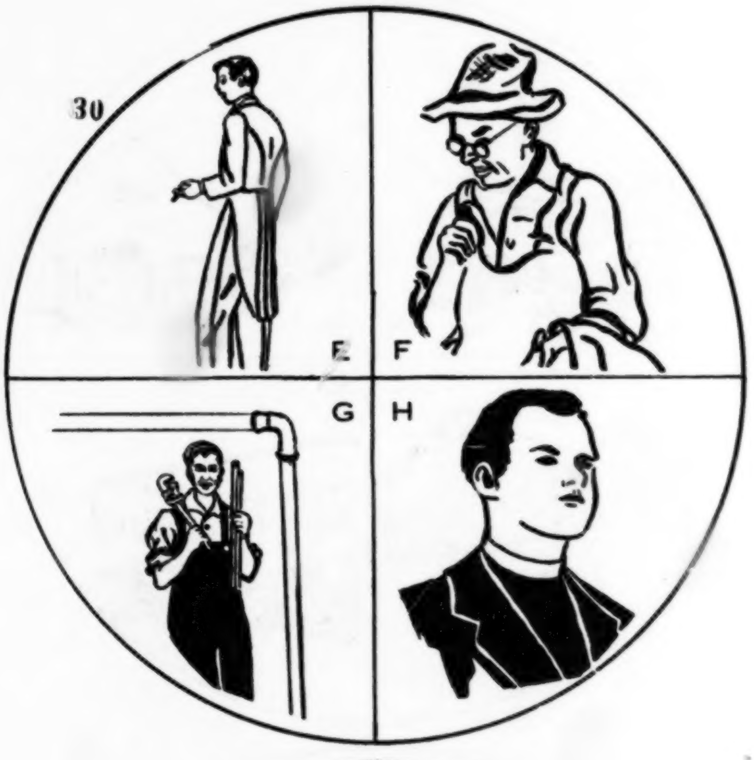
28



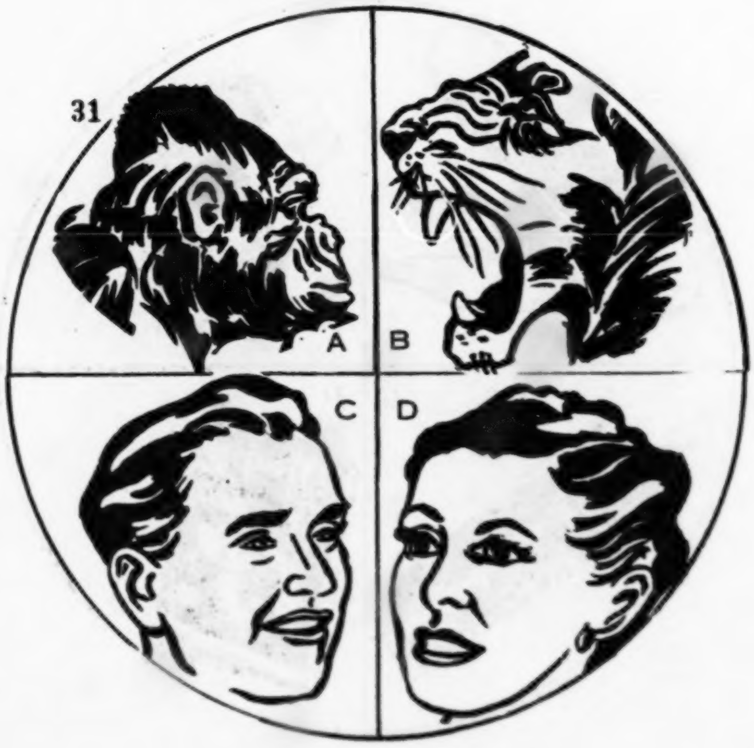
29



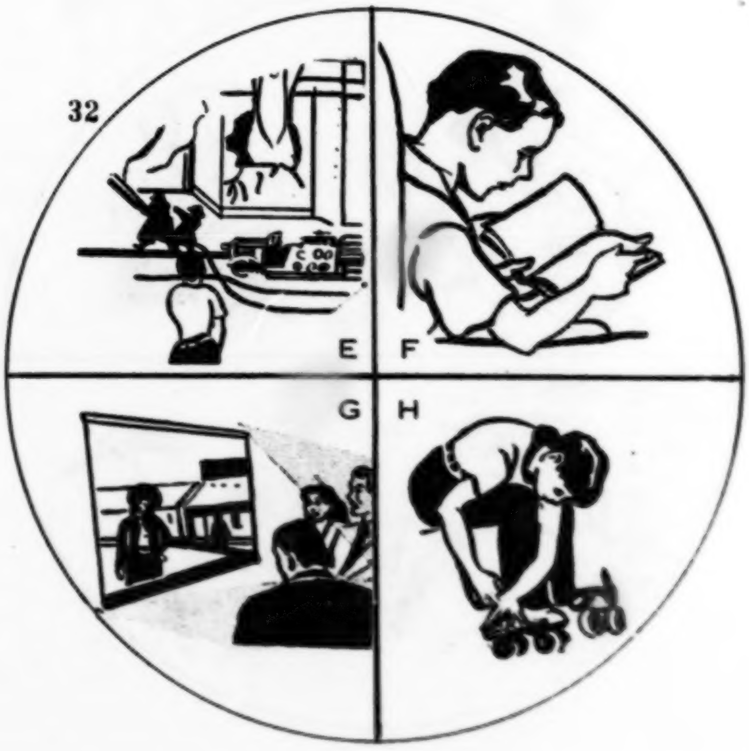
30



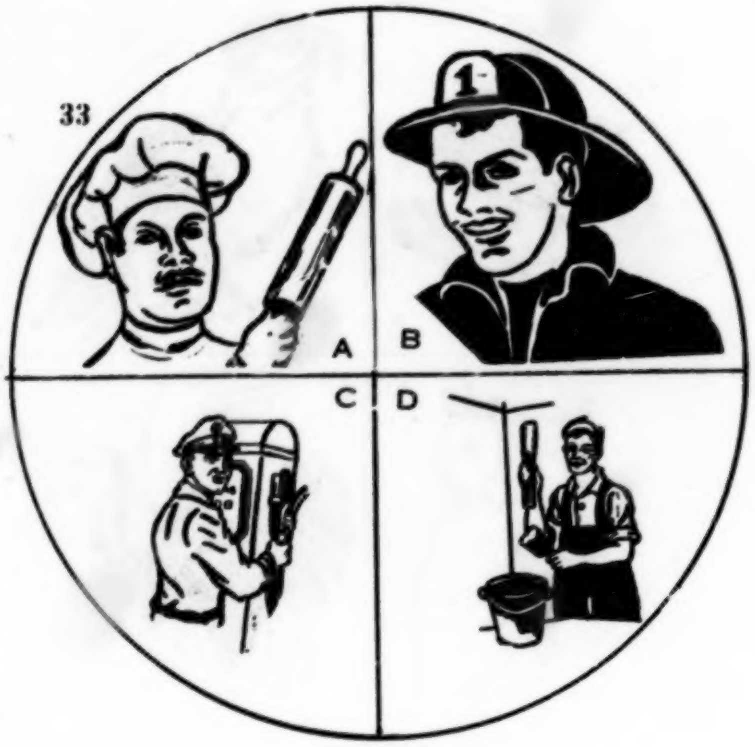
31



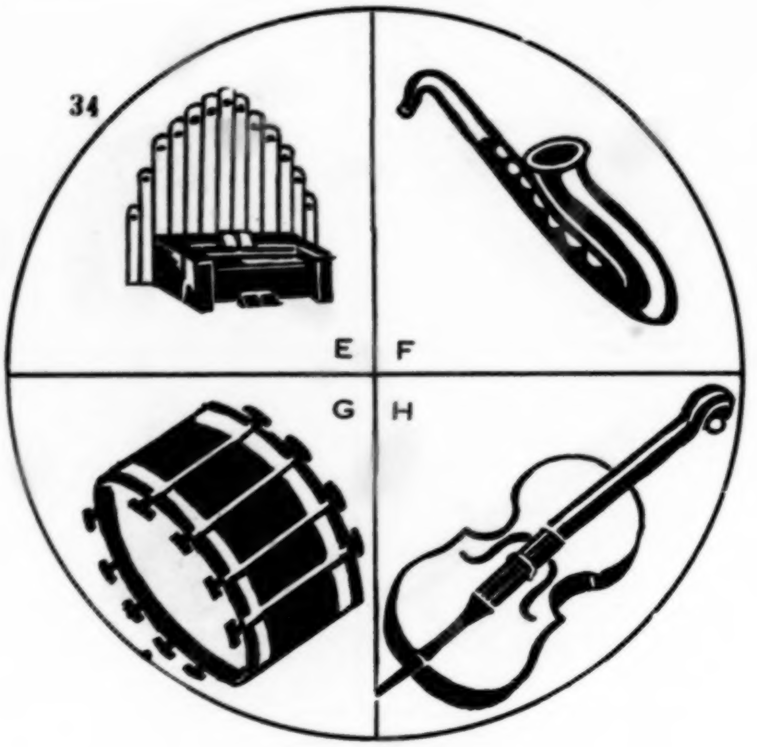
32



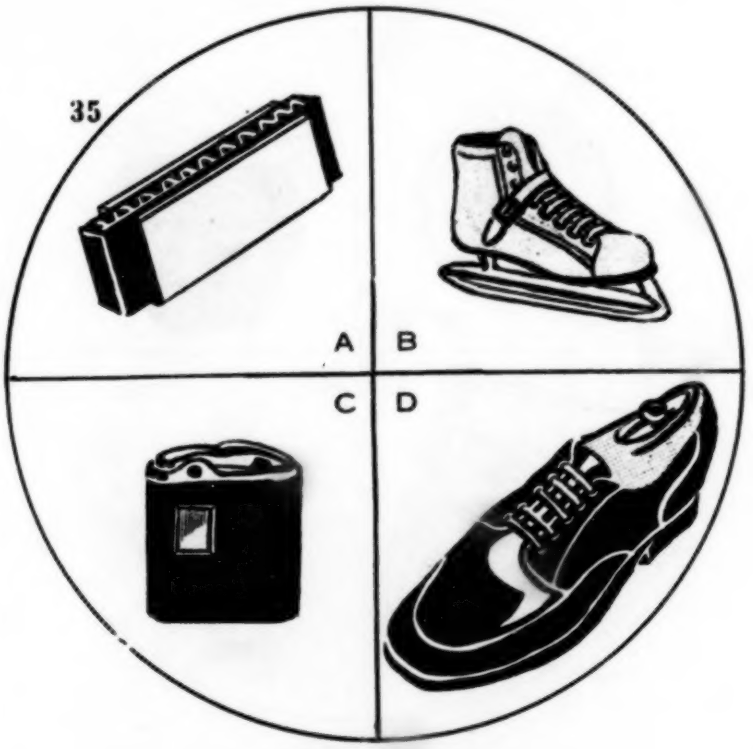
33



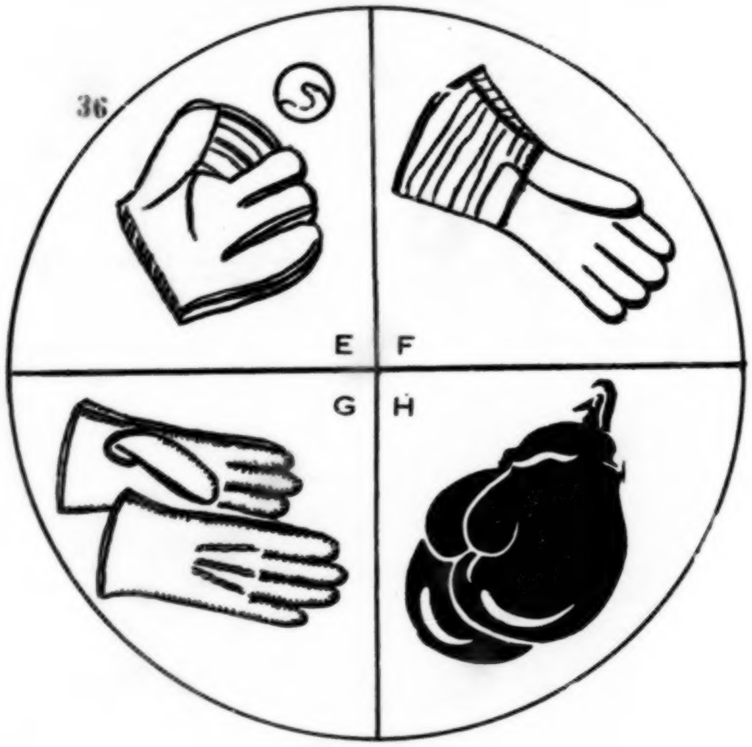
34



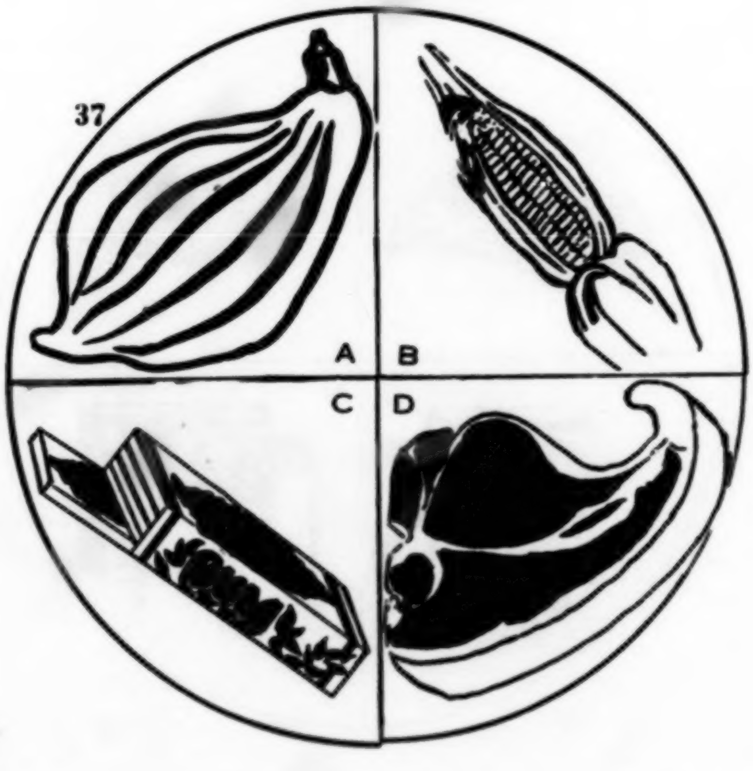
35



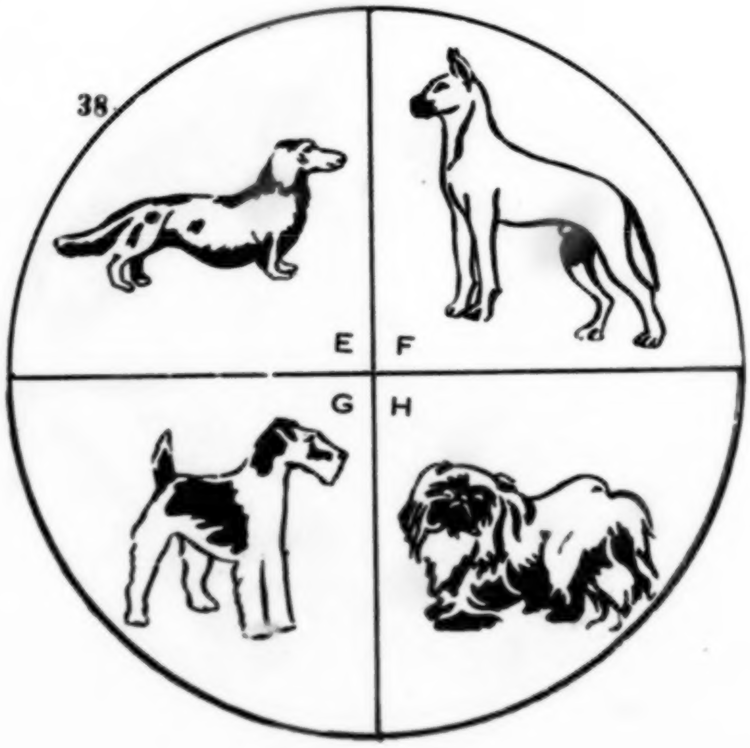
36



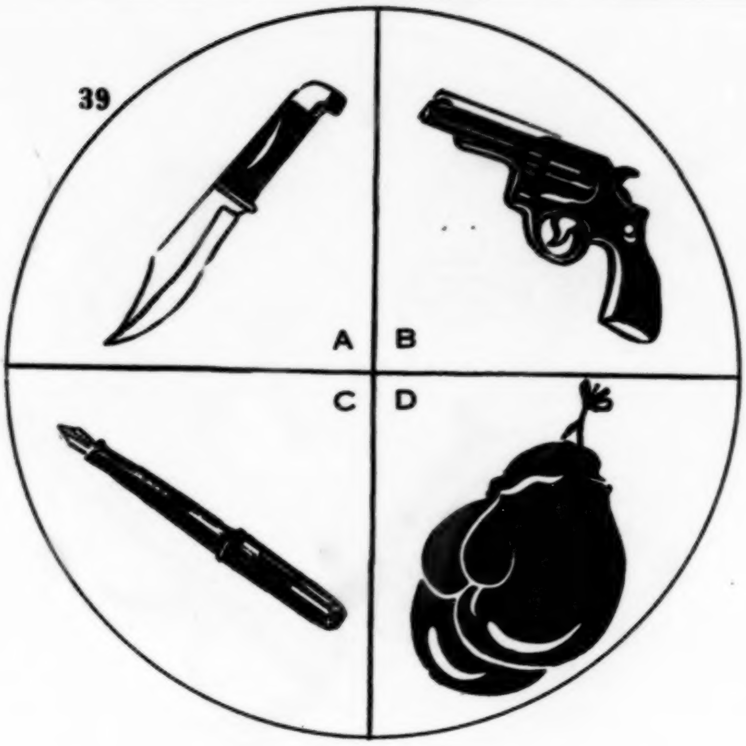
37



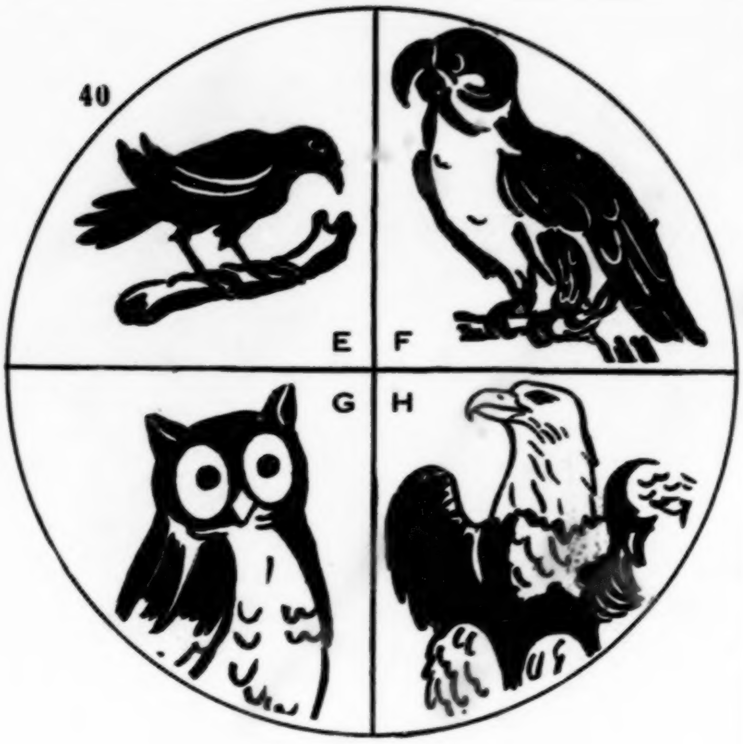
38



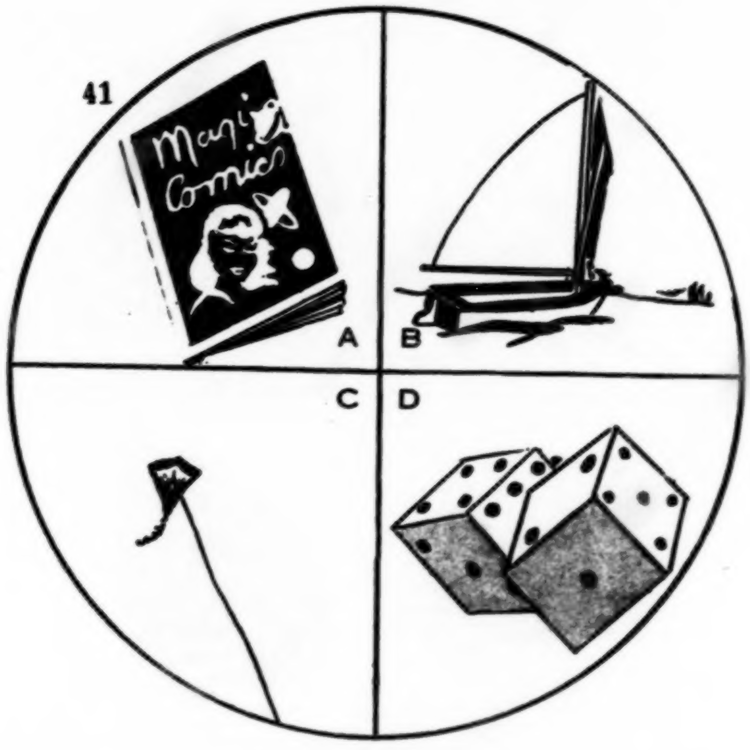
39



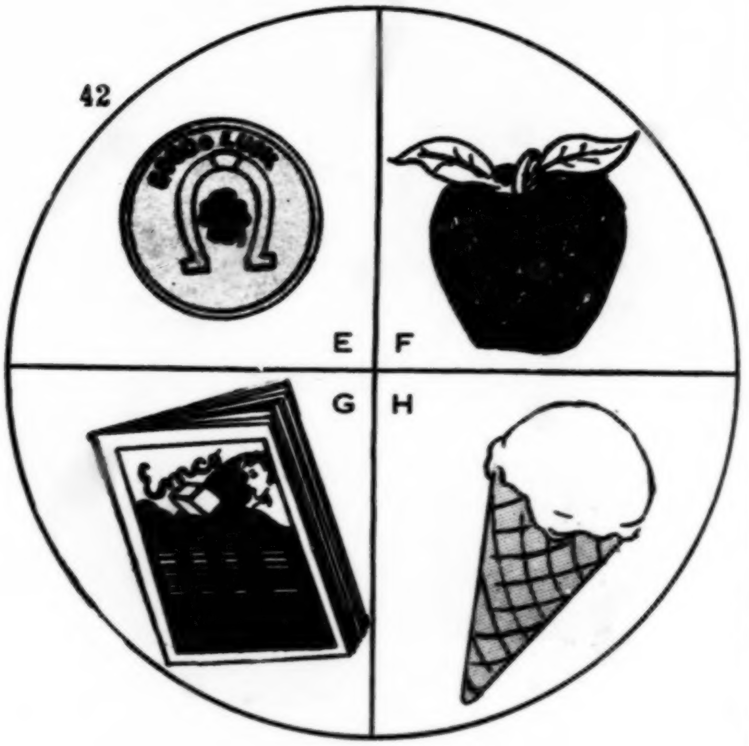
40



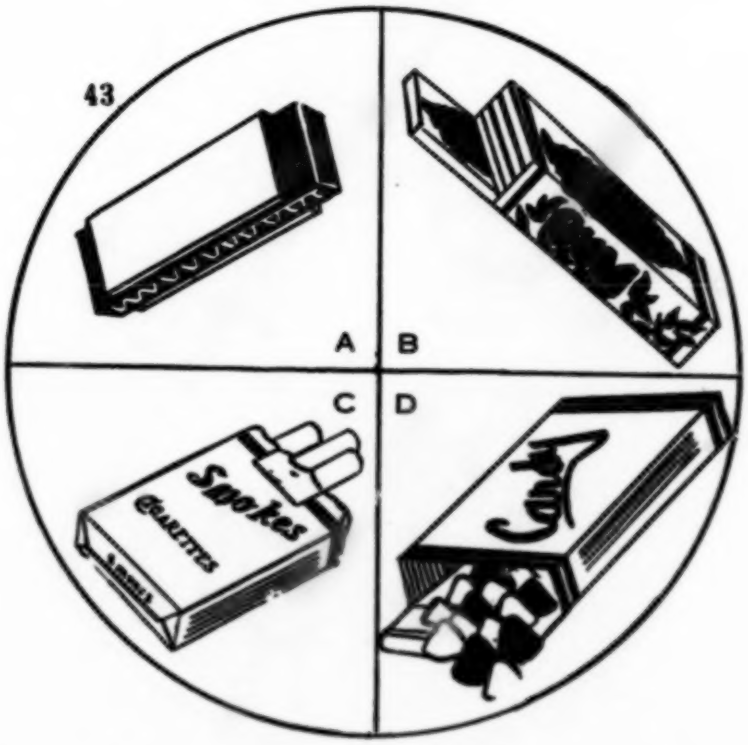
41


Magic Comics
A
B
C
D

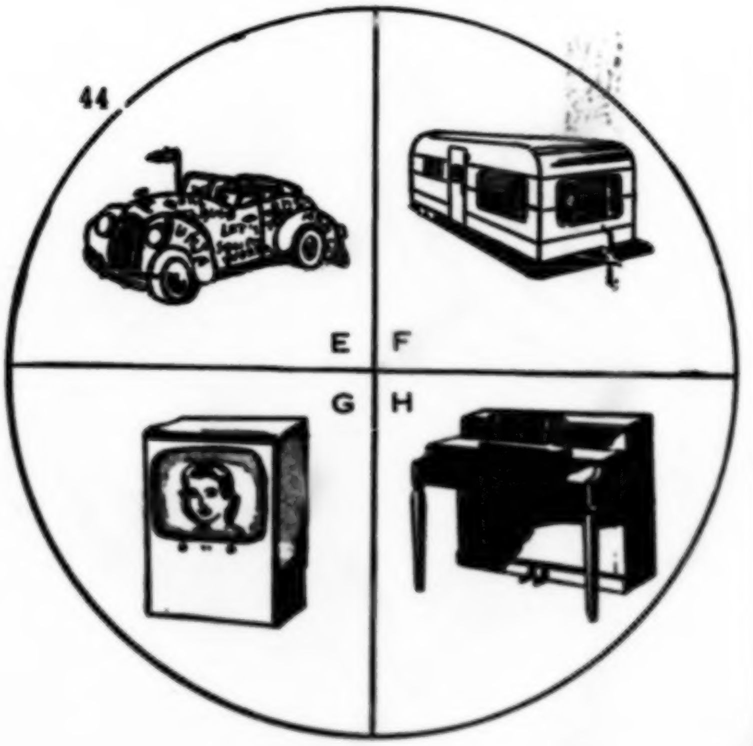
42



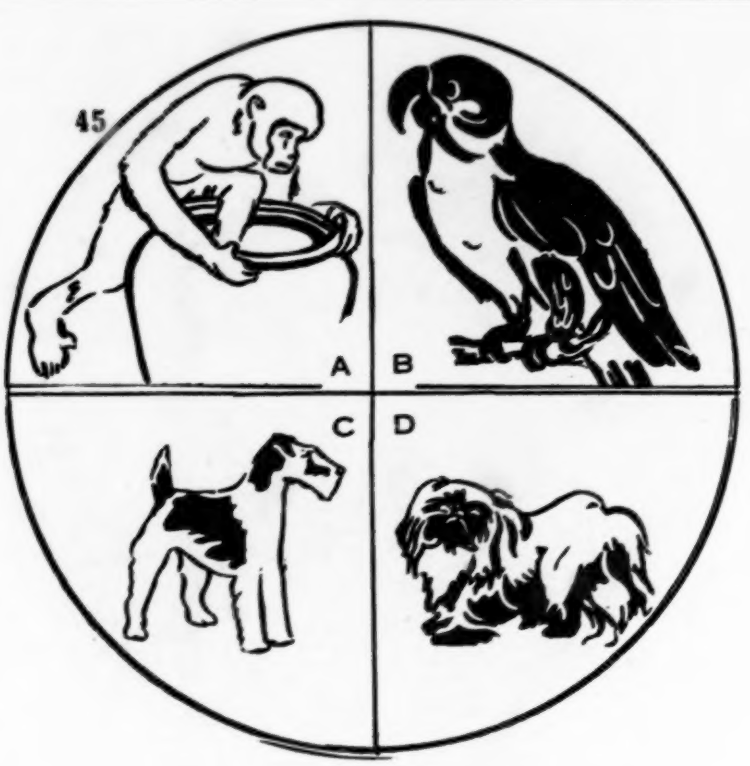
43


A
B
C
D
Smokes
CIGARETTES
Candy

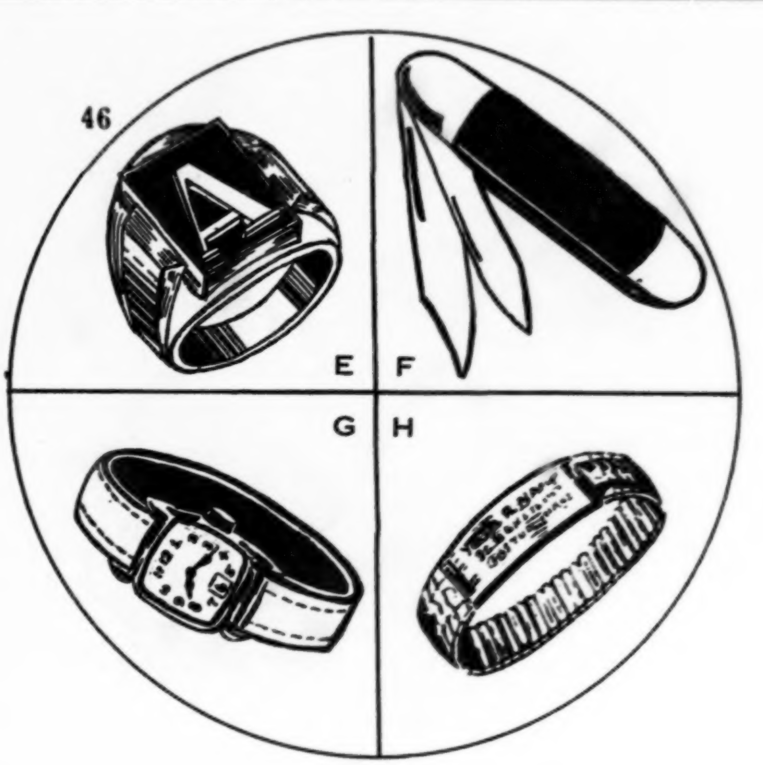
44



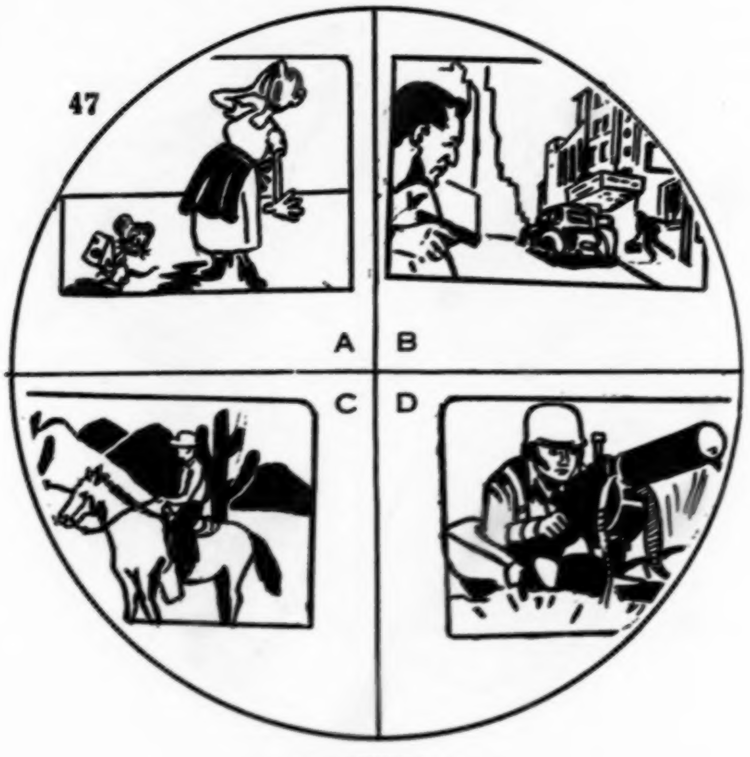
45



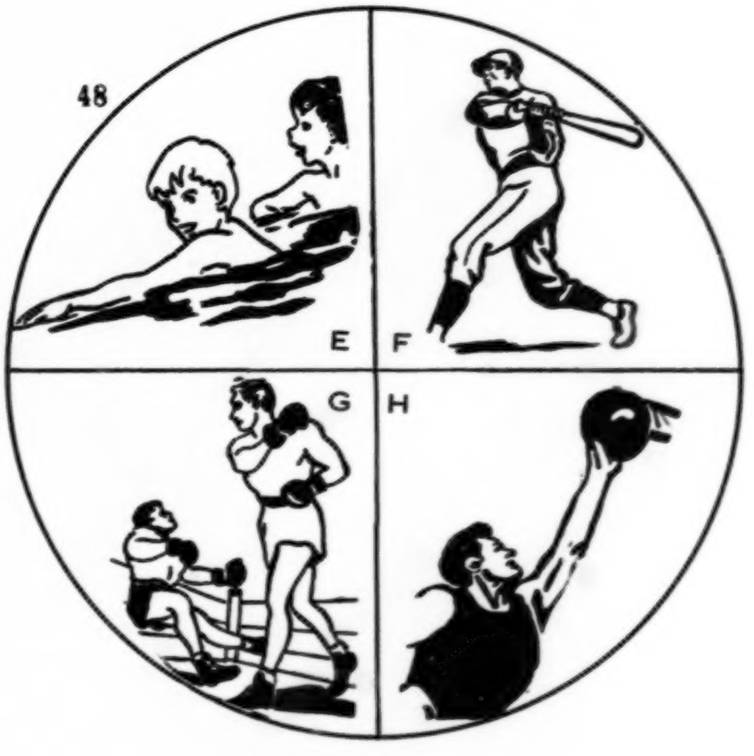
46



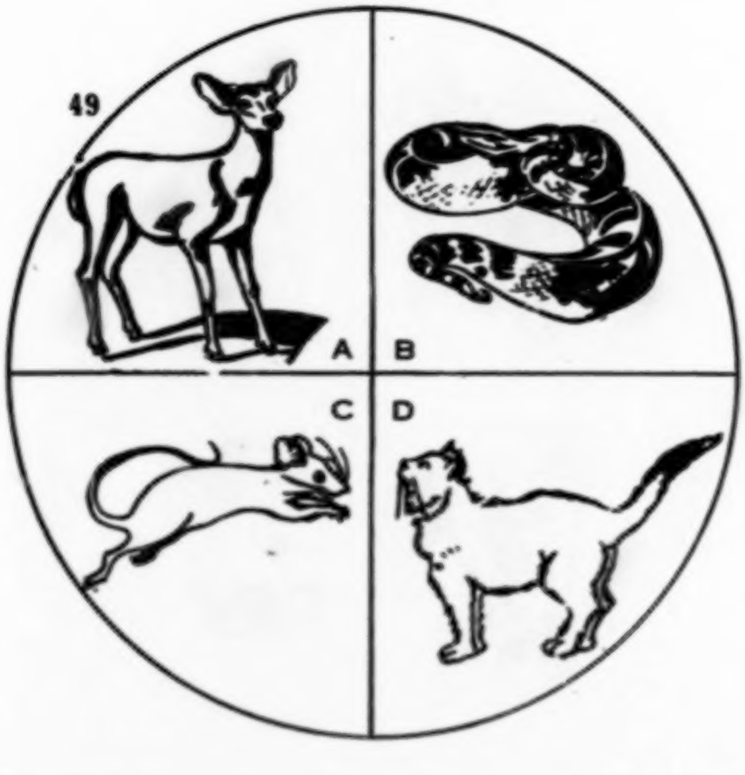
47



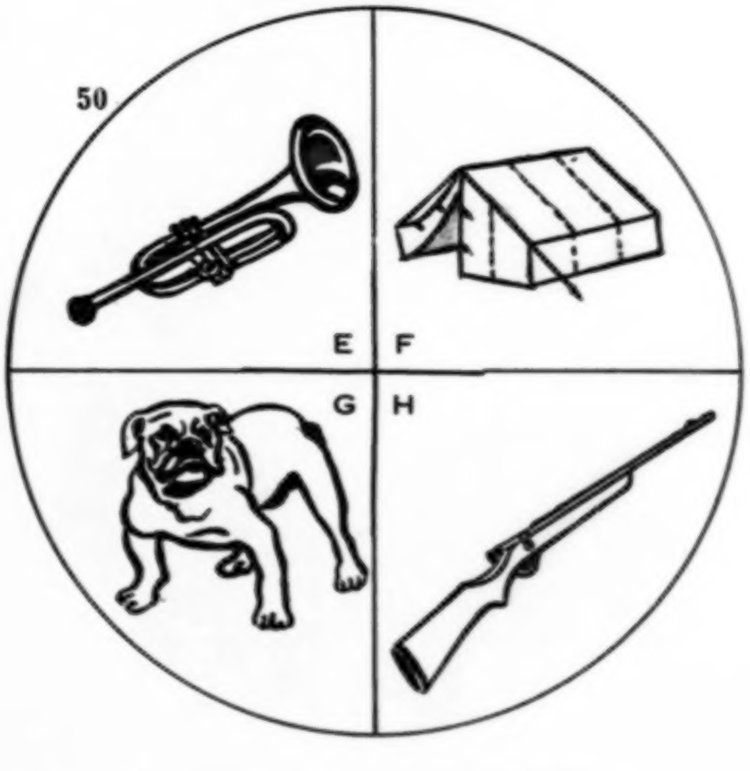
48



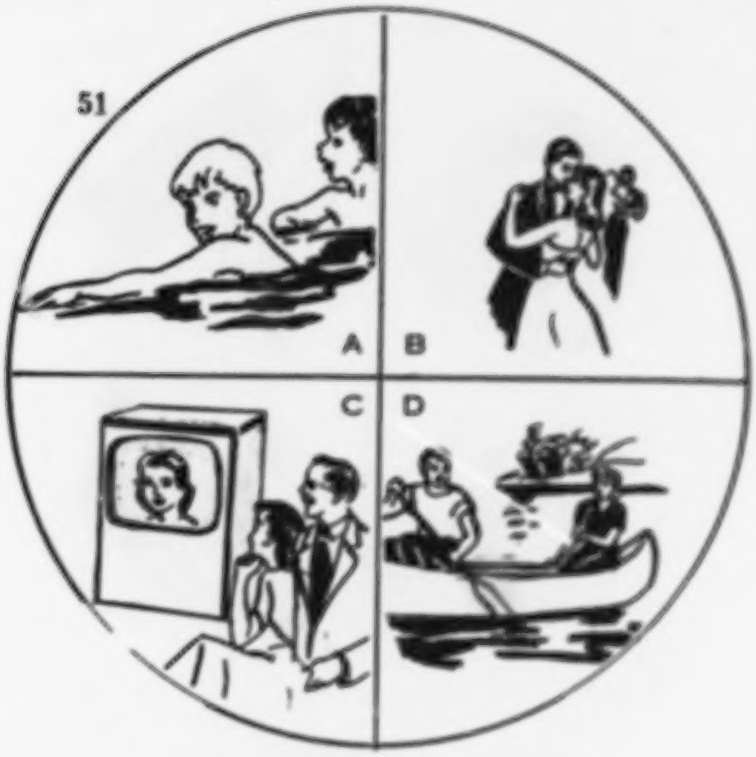
49



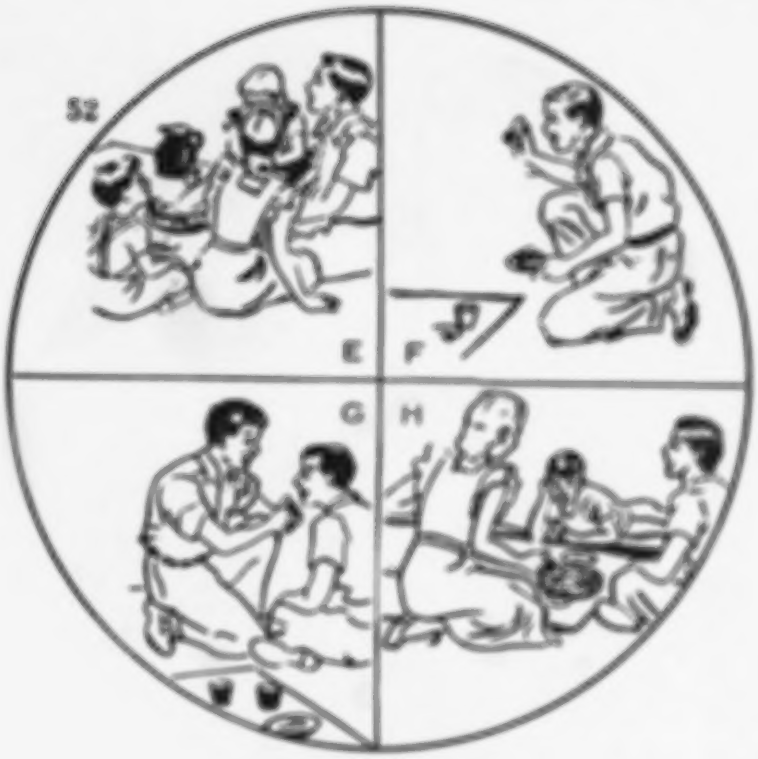
50



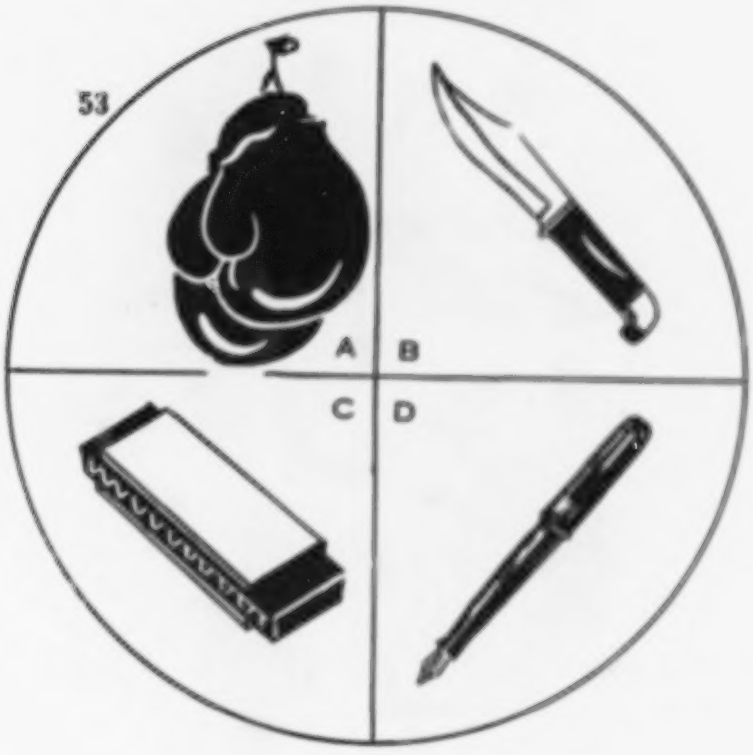
51



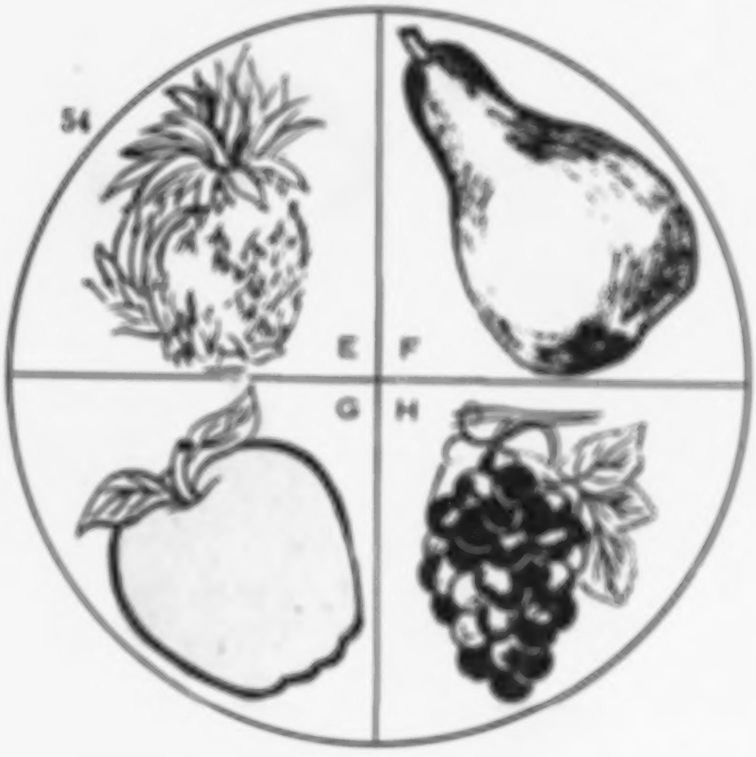
52



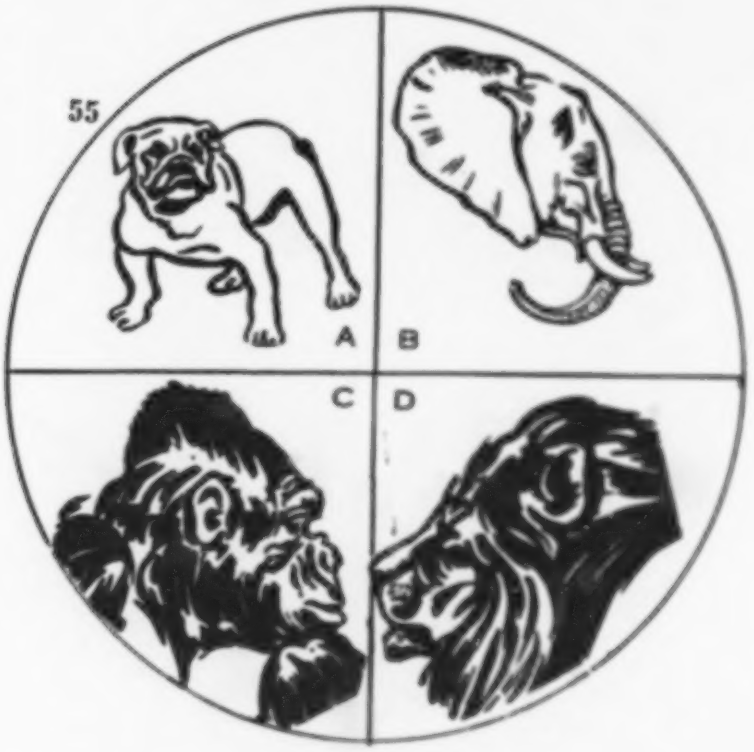
53



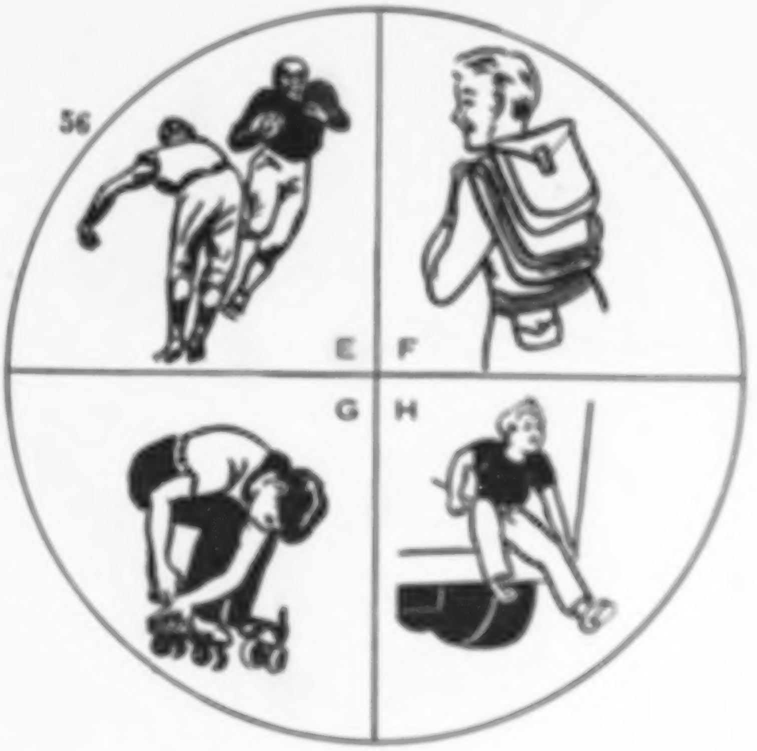
54

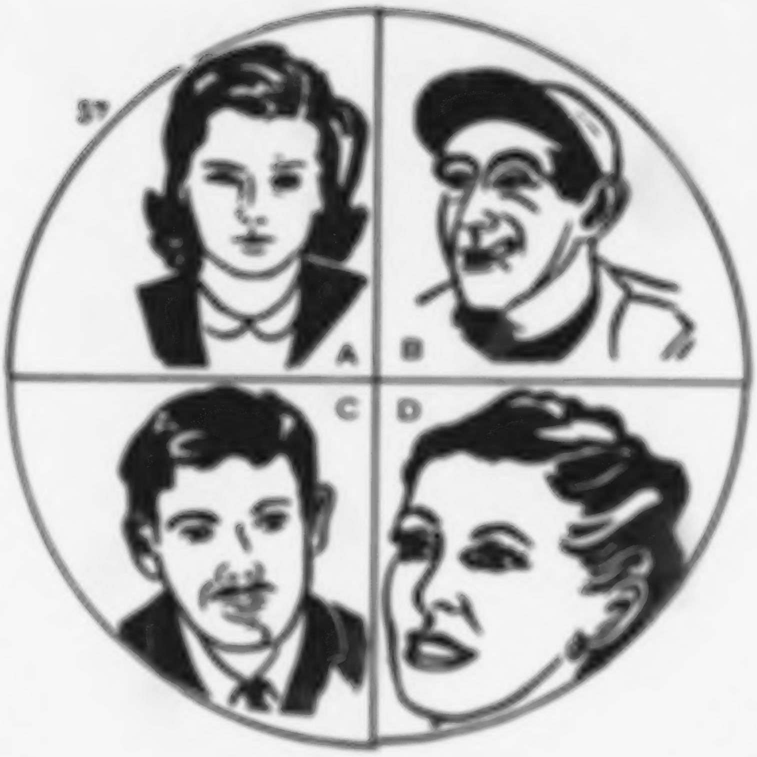


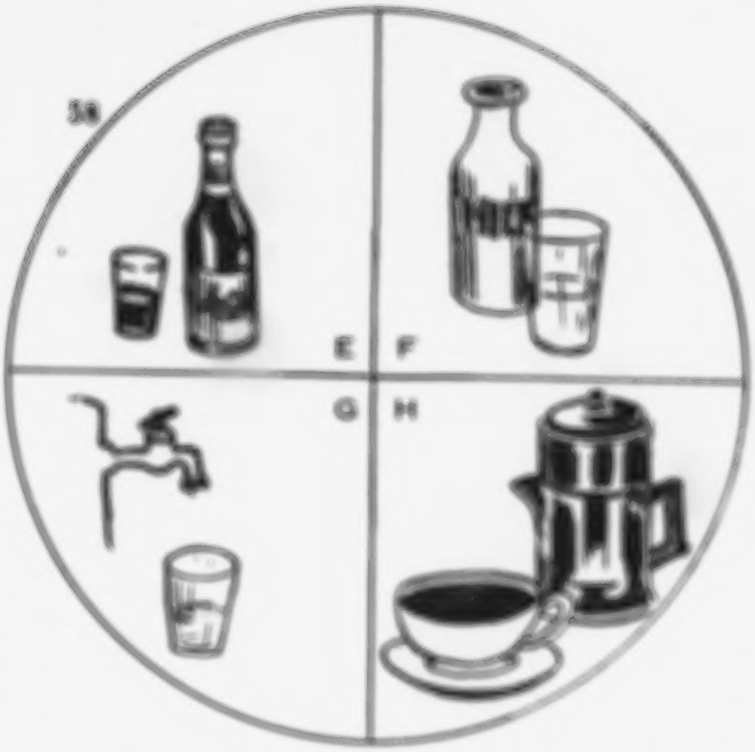
55

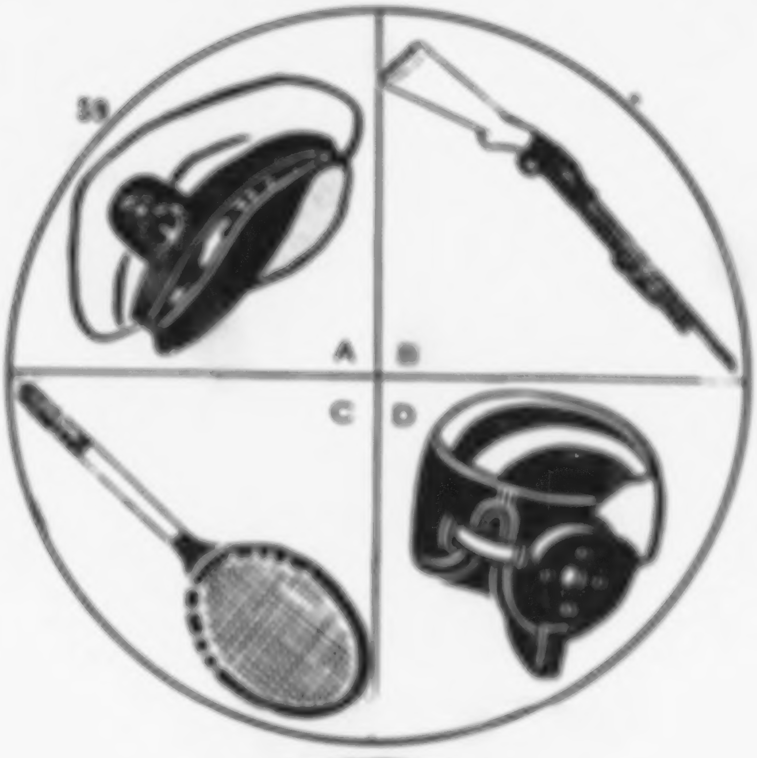


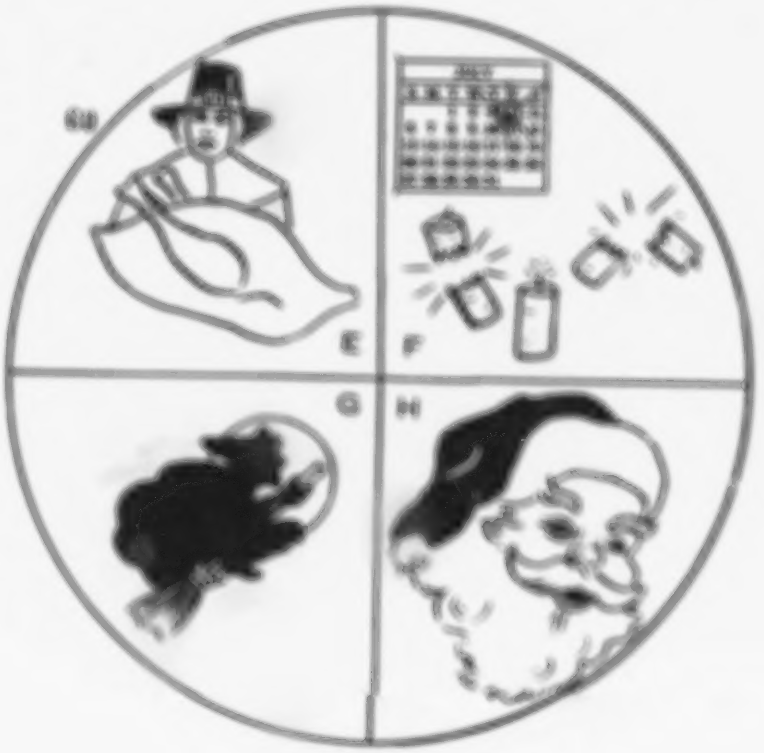
56

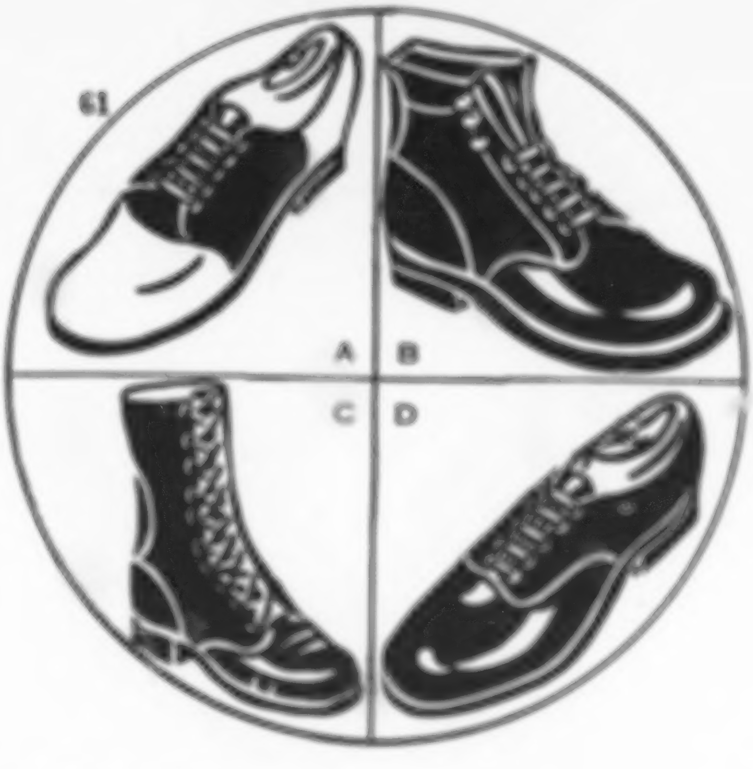


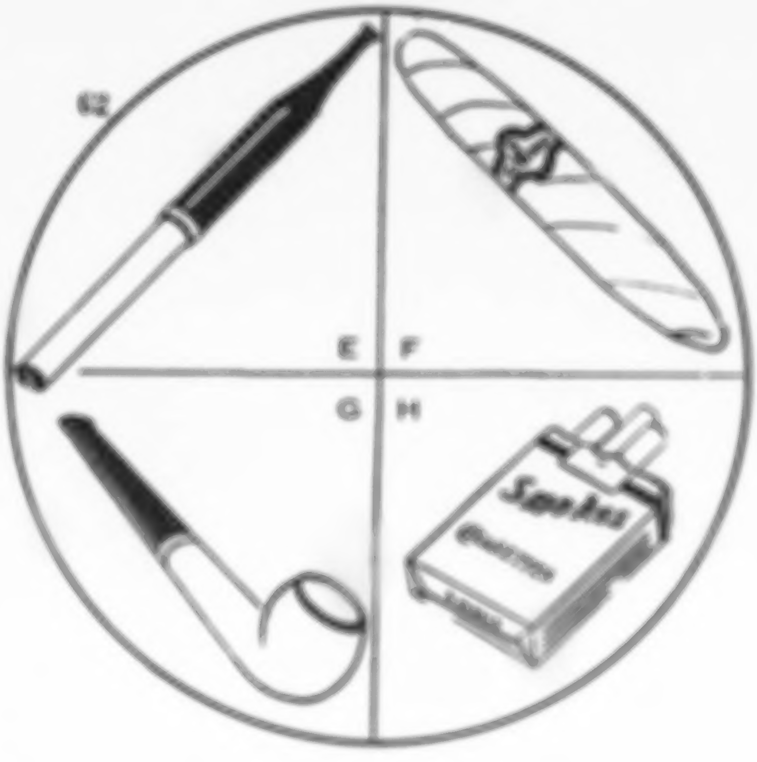

57
A
B
C
D


58
E
F
G
H


59
A
B
C
D


60
E
F
G
H


61
A
B
C
D


62
E
F
G
H
Smokes

KD PRONENESS SCALE - NON-VERBAL FORM REVISED

Name____________________ Date of Birth____________________ Age________
Last First Month Day Year

School____________________ City or Town____________________ Grade________ Date________________

M________
L________

M means MOST
L means LEAST

1	M	A	B	C	D
	L	A	B	C	D
2	M	E	F	G	H
	L	E	F	G	H
3	M	A	B	C	D
	L	A	B	C	D
4	M	E	F	G	H
	L	E	F	G	H
5	M	A	B	C	D
	L	A	B	C	D
6	M	E	F	G	H
	L	E	F	G	H
7	M	A	B	C	D
	L	A	B	C	D
8	M	E	F	G	H
	L	E	F	G	H
9	M	A	B	C	D
	L	A	B	C	D
10	M	E	F	G	H
	L	E	F	G	H
11	M	A	B	C	D
	L	A	B	C	D
12	M	E	F	G	H
	L	E	F	G	H
13	M	A	B	C	D
	L	A	B	C	D
14	M	E	F	G	H
	L	E	F	G	H
15	M	A	B	C	D
	L	A	B	C	D
16	M	E	F	G	H
	L	E	F	G	H
17	M	A	B	C	D
	L	A	B	C	D
18	M	E	F	G	H
	L	E	F	G	H
19	M	A	B	C	D
	L	A	B	C	D
20	M	E	F	G	H
	L	E	F	G	H
21	M	A	B	C	D
	L	A	B	C	D
22	M	E	F	G	H
	L	E	F	G	H
23	M	A	B	C	D
	L	A	B	C	D
24	M	E	F	G	H
	L	E	F	G	H
25	M	A	B	C	D
	L	A	B	C	D
26	M	E	F	G	H
	L	E	F	G	H
27	M	A	B	C	D
	L	A	B	C	D
28	M	E	F	G	H
	L	E	F	G	H
29	M	A	B	C	D
	L	A	B	C	D
30	M	E	F	G	H
	L	E	F	G	H
31	M	A	B	C	D
	L	A	B	C	D
32	M	E	F	G	H
	L	E	F	G	H
33	M	A	B	C	D
	L	A	B	C	D
34	M	E	F	G	H
	L	E	F	G	H
35	M	A	B	C	D
	L	A	B	C	D
36	M	E	F	G	H
	L	E	F	G	H
37	M	A	B	C	D
	L	A	B	C	D
38	M	E	F	G	H
	L	E	F	G	H
39	M	A	B	C	D
	L	A	B	C	D
40	M	E	F	G	H
	L	E	F	G	H
41	M	A	B	C	D
	L	A	B	C	D
42	M	E	F	G	H
	L	E	F	G	H
43	M	A	B	C	D
	L	A	B	C	D
44	M	E	F	G	H
	L	E	F	G	H
45	M	A	B	C	D
	L	A	B	C	D
46	M	E	F	G	H
	L	E	F	G	H
47	M	A	B	C	D
	L	A	B	C	D
48	M	E	F	G	H
	L	E	F	G	H
49	M	A	B	C	D
	L	A	B	C	D
50	M	E	F	G	H
	L	E	F	G	H
51	M	A	B	C	D
	L	A	B	C	D
52	M	E	F	G	H
	L	E	F	G	H
53	M	A	B	C	D
	L	A	B	C	D
54	M	E	F	G	H
	L	E	F	G	H
55	M	A	B	C	D
	L	A	B	C	D
56	M	E	F	G	H
	L	E	F	G	H
57	M	A	B	C	D
	L	A	B	C	D
58	M	E	F	G	H
	L	E	F	G	H
59	M	A	B	C	D
	L	A	B	C	D
60	M	E	F	G	H
	L	E	F	G	H
61	M	A	B	C	D
	L	A	B	C	D
62	M	E	F	G	H
	L	E	F	G	H

BE SURE YOUR MARKS ARE HEAVY AND BLACK.
ERASE COMPLETELY ANY ANSWER YOU WISH TO CHANGE.

1956 Rev. Ed.

DELINQUENCY PREDICTION STUDY

O.E. CONTRACT #6403, BOSTON UNIVERSITY

I. IDENTIFICATION DATA

1.) Code No. ☐☐☐☐ 4 5 6 7

Name (Print)______________________________________
Last First Middle

Address______________________________________

Date of Birth
2.) Mo. Day Year ☐☐☐☐☐☐ 8 9 10 11 12 13

3.) Sex ☐ 14

4.) School ☐ 15

5.) Grade ☐ 16

Date of Test
6.) Mo. Day Year ☐☐☐☐☐☐ 17 18 19 20 21 22

II. BEFORE DATA

Behavioral
7.) Rating ☐ 23

8.) Group IQ ☐☐☐ 24 25 26

9.) Binet IQ ☐☐☐ 27 28 29

8th Grade Achievement Scores
10.) a) Voc. ☐ 30
b) Par. Mean. ☐ 31
c) Total ☐ 32

11.) KD Non-Verbal ☐☐ 33 34

12.) KD Verbal ☐☐ 35 36

13.) KD Check List ☐☐ 37 38

III. AFTER DATA

14.) Truant ☐ 8

15.) Disobedient H-B ☐☐ 9 10

16.) Detention ☐ 11

17.) Cheating ☐ 12

18.) Stealing ☐ 13

Damage To
19.) Property ☐ 14

Hurt
20.) Others ☐ 15

Sex
21.) Problem ☐ 16

Social
Agency
22.) Contact ☐ 17

Police
23.) Contact ☐ 18

Court
24.) Contact ☐ 19

25.) ☐ 20

26.) ☐ 21

27.) ☐ 22

28.) ☐ 23

29.) ☐ 24

30.) ☐ 25

SUMMARY

31.) Behavior Score
1st Period ☐☐☐ 26 27 28

32.) Behavior Score
2nd Period ☐☐☐ 29 30 31

DELINQUENCY PREDICTION STUDY
O.E. Contract #6403, Boston University

Report Form

Name (print)____
Last First Middle

Boy- Girl-

School______________________________ Grade________

8. ( ) truant

9.-10. ( ) disobedient: breaks rules, regulations
( ) minor ( ) major

11. ( ) detention room offense

12. ( ) cheating

13. ( ) stealing

14. ( ) damage to property

15. ( ) hurts others

16. ( ) sex problem

17. ( ) social agency contact: neglect etc.

18. ( ) police contact

19. ( ) court contact

Other: (Give Descriptive Comment)

Reporter________________________

Date________________________